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COMPUTERWORLD

Chip choices outnumber user needs

BY JIM NASH and MICHAEL FITZGERALD
CW STAFF

Intel Corp. is trying to show that variety is king, with seven types of 80386 chips and four I486s on the market — and more expected by the end of the year. However, users are not impressed by the flurry of activity.

While users say they like the idea of having chip choices, they are more concerned with the challenge of getting the most out of the processors they have today than keeping pace with Intel's frequent announcements.

"I don't see a compelling reason to go out and buy the 486 line," said Michael Purcell, manager of technology planning, information resources at Baxter Healthcare Corp. Purcell said computer use has not changed drastically enough to warrant buying some chips — particularly high-end ones or the dual-clock processors Intel is supposedly developing.

A telling example may come from the lack of concern over last week's announcement by

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Today's specials

Intel Corp.'s microprocessor line sometimes changes as regularly as the catch of the day

Ship date	Product	Speed (MHz)
Feb. 1982	80286	8-12
Feb. 1987	80386DX	20
April 1988	80386DX	25
June 1988	80386SX	16
April 1989	80386DX	33
April 1989	I486DX	25
June 1989	80386SX	20
May 1990	I486DX	33
Oct. 1990	80386SL	20
April 1991	I486SX	20
June 1991	I486DX	50

Source: Intel CW Chart: Michael Siggins

Picking up pieces in the USSR

Companies study post coup climate, express caution on technology deals

BY ELISABETH HORWITT
CW STAFF

Although the coup d'etat in the Soviet Union was a failure, the turmoil and sights such as tanks rolling through the streets of Moscow raised fears for U.S. businesses dealing with the USSR, many of whom had just begun operations or investments in that market.

It was a week when U.S. employers struggled with jammed telephone lines to reach their USSR-based workers; Soviet citizens invented ways of communicating with the West; Americans questioned the wisdom of doing business with Moscow; and stock indexes plunged and soared.

U.S.-to-USSR circuits, overburdened at the best of times, were effectively plugged by a volume of calls 100 times the normal level, according to AT&T.

Electronic bulletin boards and other systems such as satellites provided Soviets with links to the rest of the world.

Companies such as Control Data Corp., Borland International, Inc. and Pepsico, Inc. reported business as usual in their Soviet offices. However, other companies said they had to curtail or even close their operations.

Radisson Hotel International, Inc.'s property in Moscow, which opened for business just last month, saw cancellations from many business travelers last week, according to Derek Mattes, a computer systems specialist at the hotel chain. While these cancellations were somewhat offset by a huge leap in bookings from the media, getting those reservations from Radisson's Omaha reservation center to Moscow proved difficult or impossible.

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IN DEPTH

U.S. firms go offshore for cheap DP

BY GARY H. ANTHES
CW STAFF

In the early 1980s in Oklahoma, oil was selling for $30 a barrel, and the oil companies were snapping up much of the available labor. For American Airlines, which employed nearly 400 people in Tulsa in 1983 to key data from 45 million passenger tickets, the oil boon was its labor bust. It was tough to find data entry people and harder to keep them. The airline could offer its keyers few advancement opportunities.

The solution seemed obvious: Find a place where there was no shortage of data entry personnel. American chose Barbados.

Today, American has been joined by a growing number of insurance, retail, financial and publishing firms moving data processing's blue-collar jobs overseas. The reason? A sizable, inexpensive and stable labor pool. In many countries, people are scrambling for the opportunity to key 10,000 to 20,000 characters per hour for less than $2 per hour — one-third to one-fifth the rate for comparable work in the U.S.

Stephen O'Sullivan, vice president and corporate controller at American, says the firm now gets its work done "at substantially lower cost," though he refuses to be more specific. O'Sullivan

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Outsourcing win for DEC

BY MARYFRAN JOHNSON
CW STAFF

BREA, Calif. — The long-standing IBM/Digital Equipment Corp. rivalry in the data center took a new turn last week with DEC winning a round in one arena of the 1990s: outsourcing.

Earle M. Jorgensen Co., the largest independent steel distributor in the U.S., chose DEC last week to manage a major outsourcing project that will unify the company's diverse applications on VAX 9000 mainframes and eventually replace an outsourced IBM 3090 mainframe.

"We'd rather buy steel with our dollars than computer equipment," said Graham P. "Bud" Kilsby, chief information officer at Jorgensen. DEC values the five-year contract at $16 million.

While this is DEC's largest outsourcing contract in the Los Angeles area, company officials said DEC's network outsourcing deal with Eastman Kodak Co. is worth more than $100 million, and another outsourcing arrangement, with The Boeing Co., is valued at more than $50 million. Systems integration and outsourcing work is approaching the $2 billion mark in annual revenue for the $13 billion Maynard, Mass.-based vendor.

Jorgensen officials said they figure the outsourcing arrangement, which is scheduled to be in full production by April 1992, will triple the firm's computing power and quadruple disk storage capacity.

The VAX 9000s and

Continued on page 6

Users more exposed to vendor suits

Experts urge IS to be alert to legal snags

BY NELL MARGOLIS
CW STAFF

However the fur flies among vendors in the increasingly litigious computer industry, the general rule has been this: Vendors don't sue users.

Earlier this month, VI Systems, Inc. broke that rule.

But the Dallas-based software house did not log a first when it dragged Burlington Coat Factory Warehouse Corp. into court. Earlier this summer, IBM Credit Corp. extended the charges in its leasing-based lawsuit against Comdisco, Inc. to include software firm and Comdisco customer Computer Associates International, Inc.

While experts said last week that they do not expect a barrage of antiuser suits, they also warned information systems directors to consider the possibility and act to prevent it. Failing to do so could harm a firm's bottom line and the IS executive's career, the experts said.

VI Systems' prime target is Glendale, Calif.-based software

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Michael Abramson

Continental Bank's Thomas C. Theobald says IS has fallen short of its potential to fundamentally change the banking industry. See The CEO View, page 47.

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81 Portable computer makers adopt a foreign policy, moving production offshore in response to U.S. government restrictions.

Quotable

"I'm safe and sound. My family also. Despite the state of emergency, Borland's products sell as usual."

BORLAND EMPLOYEE

Communicating from Moscow via E-mail with company headquarters. See story page 79.

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The 5th Wave

Poet e.e. cummings makes his last service call.

EXECUTIVE BRIEFING

■ **Fear in the air meant a traffic jam on the phone lines to the Soviet Union** last week, but ingenuity and technology kept U.S./Soviet communications going. Besieged Russian Federation President Boris Yeltsin reached the outside world via a cellular telephone borrowed from a visiting U.S. executive. E-mail, electronic bulletin boards and satellites, separately and in resourceful combination, got others through. **Page 1.**

■ **Savings of up to 50% and a large, stable labor force** are increasingly drawing U.S. firms overseas to countries such as the Philippines and Ireland for data entry. That trend is expected to continue as the U.S. data entry arena remains plagued by labor shortages and high staff turnover. **Pages 1, 59.**

■ **IS is losing the backlog battle.** Tougher competition, shortened product life cycles, shrinking budgets and rising user demands mean development and maintenance backlogs are increasing. To cope, IS departments are employing a variety of tactics, including carefully screening projects, buying more off-the-shelf systems and limiting system size. **Page 51.**

■ **Bad news: Vendors do sue users**, as two recent cases prove. Better news: Users can guard themselves with carefully drafted contracts — and carefully selected suppliers. **Page 1.**

■ **IS head Ollie Ohnstad is brewing up a LAN** for Celestial Seasonings — a company whose 1989 IS resources amounted to two ancient and overtaxed minicomputers. **Page 41.**

■ **Electronic Data Systems logged a two-coup week:** The systems integration player upped its CAD clout by announcing its intent to buy McDonnell Douglas' systems integration subsidiary and consummated its long courtship of UK-based software house SD-Scicon. **Page 80.**

■ **Have it your way: Intel now offers seven types** of 80386 chips and four flavors of the 80286 microprocessor, with plans to serve up a possible six more I486 chips this fall. **Page 1.**

■ **Users are banding together** to show vendors exactly what they want in an open system — and to urge the vendors to supply open systems as soon as possible. **Page 27.**

■ **Unsolicited calls from recruiters** can be rewarding, as long as an IS professional knows how to handle the calls. **Page 67.**

■ **DEC wins a $16 million outsourcing contract** with billion-dollar steel distributor Earle M. Jorgensen Co. Plans are also afoot to unify the steel company's myriad applications on DEC's VAX 9000 — and to replace an IBM 3090. **Page 1.** In other DEC news, the firm's IS business unit head Robert Glorioso departs because of family needs. **Page 6.**

■ **IS professionals can keep the costs of on-line services under control** by negotiating volume discounts, assessing the need for a service's special features and finding the most efficient method of communications access. **Page 73.**

■ **On site this week:** Nissan Motor signed off on a yearlong effort to replace 25 aging IBM 8100 computers with a floorful of AS/400s. The $10 million conversion effort is aimed at letting Nissan track its huge auto inventory on-line, cut ship time to dealers, and — hopefully — challenge Japanese import giants Honda and Toyota. **Page 31.** Aided by an RDBMS/4GL tool from Recital Corp., Bechtel-Savannah River built a system that will eventually let some 150 users in various work groups share a DEC VAX-based central information database housing contents that were once scattered among databases on 25 disparate PCs. Team coordination is key to this project: The crew is working on a nuclear waste processing plant. **Page 33.**

Dow Corning achieves 750% improvement in data restore time with Syncsort/BACKUP

The limiting factor in the usefulness of a disaster recovery plan is speed: maximizing the speed of backup procedures and minimizing data restoration time is the name of the game. The cost benefits of optimizing these parameters are really incalculable since the whole purpose of the plan is to allow critical business functions to continue with as short an interruption as possible—despite operation-disrupting events.

The importance of fast VM system restoration was brought home to Dow Corning recently during a hotsite test when we tried—but failed—to complete a full system restoration of the equivalent of 120 single density volumes of data in a 32 hour test window. Had the restoration not been under test conditions, a wide variety of critical business operations running on the VM system would simply not have been available for an extended period of time. The results could have been severe.

Dow Corning is a leading provider of a diverse group of silicone-based specialty chemical materials, ranging from bathtub caulk to health care products, and industrial products such as sealants, rubber, resins, fluids, and semiconductor silicon. The company installed its VM system in 1983, and since that time applications and users have steadily increased. The system now runs on an Amdahl 5995-1100 and supports 6000 users worldwide.

The hotsite test underscored our dependence on the VM system as well as the need for an improved backup and restoration system. We responded by implementing Syncsort/BACKUP (SYBACK) from Syncsort Inc., Woodcliff Lake, New Jersey.

We initially obtained the product on a trial basis just one month before our next hotsite test. Yet even with that restricted time period, we were able to shorten the actual data restoration time to just five hours—an improvement of almost 750%.

The primary reason SYBACK provides such dramatically improved results is its ability to complete physical backups and restorations of the entire system in record time. Where the previous product required 20 minutes to physically backup one single density volume, SYBACK can complete the same work in less than 10 minutes.

Because it took so long to physically backup volumes with the former system, we depended on logical backups. But logical restores are much slower to complete than physical restores—even with the fastest system—because they are done on a minidisk by minidisk basis, and also require minidisk format time. Physical restores, by

by Stanley G. Pope
VM Systems Programmer
Dow Corning Corp., Midland, Michigan

comparison, are done cylinder by cylinder and require no preformatting. Further time savings are accomplished by SYBACK's building the restore job at the end of each physical backup. A file containing all of the restore commands needed to restore the entire system is generated, and saved along with the backups. This greatly simplifies the entire physical restore process.

In general, logical restores are recommended only when separate files or minidisks are needed, typically onsite. If a system pack fails, however, as may occur in the event of a hardware problem or a disaster, a physical restore can provide much faster results.

For this reason, to restore all data to the point of a disaster (daily sync-point) with our former product would have taken weeks—and would have cost us dearly. The goal of our Business Continuation Plan (BCP) is complete system restoration to the daily sync-point in just 16 hours. This will be achieved through the use of a physical restore taken from the weekend physical backup, and a logical restore provided by a special logical backup that backs up only daily changed data.

We are confident of achieving our goal because of SYBACK's fast physical restores as well as its streamlined logical backup and restore process. In a benchmark test, our former product took 25 minutes to logically backup a user volume comprised of 200-300 minidisks. SYBACK, by comparison, completed the same logical backup in half the time.

The fast logical backup time has enabled us to improve our daily backup procedures for onsite file recovery as well. In the past, each daily incremental backup (onsite logical) would cover only that day's changed data. During a late week minidisk restoration, this could result in up to five tapes being called for. This limitation was caused primarily by backup speed. With SYBACK's fast logical backups, however, we can now complete daily incrementals that contain all of the data that has changed since the last base logical backup. The result is fewer tape mounts during restoration, and a streamlined restoration process.

To further optimize backup and restoration speed, SYBACK supports up to 10 tape drives simultaneously and features non-specific tape mounts during backups. With an automatic tape loader—which supports 10 tapes—on each of our tape drives, this allows the pre-loading of 100 tapes. Our weekly physical backup, which uses 220 tapes, requires only that the operator make sure that the loaders are filled with tapes. This is far easier, faster, and less cumbersome than the specific tape loads that were needed with our former product.

Virtually all companies depend on their data resources and should implement Business Continuation or Disaster Recovery plans. To ensure that the plans work, frequent hotsite tests should be completed. And to achieve quantum leaps in backup and restoration performance and efficiency, consider implementing SYBACK.

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Apple to tempt corporate users with server

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. plans to use the opening day of Comdex/Fall '91 to add more substance to its campaign for the mainstream corporate market, unleashing a pair of high-end Macintosh computers that will include its first file server, sources close to the company said.

Although the planned Oct. 21 rollout could be overshadowed by the concurrent introduction of three splashy notebook-size personal computers and a souped-up Macintosh Classic using Motorola, Inc.'s 68030 chip, the advanced Macintoshes could prove more important to Apple in the long run.

"Apple needs a more convincing server story if it is to persuade corporations to purchase Macintoshes as clients for enterprise computing," said Richard Shaffer, editor of the "Computerletter" newsletter.

"We're using a Sun workstation now for a server, and it works just fine," said Mark Sheppa, a senior analyst in the technology services department at TRW, Inc. in Cleveland. "Apple is going to have to come up with some serious advantages to make us switch."

Using the Las Vegas extravaganza as a product launching pad could also prove a cagey marketing move designed to steal the spotlight at a show traditionally dominated by IBM PCs and their clones. Apple typically introduces new Macintosh models at special events not associated with trade shows.

The new systems, however, may come with a technical hitch: Because the 68040 manages memory differently than the rest of the 68000 family, it cannot currently take advantage of System 7.0's virtual memory feature, a technique that uses space on the hard drive to fool the Macintosh into thinking it has more random-access memory than is actually available. Apple engineers are reportedly working on revisions to the chip.

The tower model Quadra 900 and the desktop Quadra 700 will be the first Macintoshes to use Motorola's speedy 25-MHz 68040 microprocessor. Apple users said the Quadra 900, in particular, could go a long way toward simplifying their jobs.

"In our current Mac-to-VAX setup, negotiating the file system has sometimes been a bit tricky; with a Mac server, that shouldn't be a problem," said Art Masson, director of transportation systems development at CSX Technology, a division of CSX Corp.

The Macintosh Quadra 900 was designed to serve as a hub for a PC network and includes an internally configurable hard drive and significant expansion capabilities as well as tampering safeguards. It will cost about $7,500 and include 4M bytes of RAM. A model with 160M bytes of hard disk space will also be available.

A base model of the Quadra 700 will include 4M bytes of RAM and will list for approximately $6,500. A version with an 80M-byte hard drive and a 160M-byte hard drive will also be offered. Both models will also have Nubus 90 slots, which can transfer data much more quickly than the current Nubus.

Corporate look

Apple Computer, Inc. hopes its Comdex/Fall '91 product introductions will give it fresh ammunition in corporate accounts

Current	CPU	MIPS	RAM	Hard disk	Base price
Macintosh IICI	25 MHz 68030	NA	5M bytes	80M or 160M bytes	$5,269
Macintosh IIFX	40 MHz 68030	NA	4M bytes	80M or 160M bytes	$7,369
Planned	**CPU**	**MIPS**	**RAM**	**Hard disk**	**Base price**
Macintosh Quadra 700	25 MHz 68040	15	4M bytes	80M or 160M bytes	$6,500
Macintosh Quadra 900	25 MHz 68040	15	4M bytes	160M bytes	$7,500

CW Chart: Michael Siggins

At your service

Expected fall rollouts will play into Apple's move to push the so-called client/server computing model. Although Apple computers share information with non-Apple systems as readily as other brands of desktop systems, their lack of a common processor, operating system and applications has presented tough hurdles for IS managers planning large networks.

Apple began ironing out part of those troubles in March, when it announced its first licensing agreements for its Data Access Language (DAL), a connectivity language that allows users to access relational database information from the server host.

The DAL licensing arrangements with Novell, Inc., Tandem Computers, Inc., Data General Corp., Blyth Software, Inc. and Pacer Software, Inc., as well as earlier DAL pacts with Digital Equipment Corp. and IBM, are expected to speed production of DAL-based servers and help Apple penetrate the corporate world. Similar announcements are expected to follow. "We plan to issue more licenses than the Department of Motor Vehicles," product marketing manager Doug McLean said.

Apple, Adobe mend fences

BY CAROL HILDEBRAND
CW STAFF

The Apple/Adobe roller coaster relationship appears to be on the uptick with the announcement that Apple Computer, Inc.'s System 7.0 operating system will no longer give the cold shoulder to Type 1 font technology.

Adobe Systems, Inc. announced last week that the two companies had signed a letter of intent that provides for the inclusion of Type 1 in future System 7.0 enhancements. System 7.0 will also continue to support Truetype, a rival system from Apple and Microsoft Corp.

The agreement calls for the development of software to support the Type 1 rasterizer and font technology within the System 7.0 environment in a "near-term enhancement release of the system software," Adobe officials said, adding that an interim solution will be available shortly, with an official announcement planned for this fall.

Industry observers agreed that the announcement would have an overall positive impact on users.

"Adding access to a lot more fonts can't help but be a positive thing for users," said Bob Fennell, an analyst at Dataquest, Inc.

Molly Joss, technical editor at industry newsletter "Desktop Publishing Systems," said that the move was long desired and that many users had let Apple know they wanted Type 1 support in System 7.0.

Apple and Adobe have been slowly working back to their close relationship of the mid-'80s. The alliance was sundered in 1989, when Apple sold a chunk of Adobe stock estimated at approximately $90 million and joined forces with Microsoft to create Truetype and the Trueimage Page Description Language in direct competition with Adobe's Postscript PDL.

Microsoft begins shipping multimedia for Windows

BY CLINTON WILDER
CW STAFF

REDMOND, Wash. — Running two months later than planned, Microsoft Corp. began shipping its multimedia package for Windows to developers last week.

Windows with Multimedia Extensions 1.0 is expected to open the DOS world to more multimedia applications, which so far have been more concentrated in the Apple Computer, Inc. Macintosh and Commodore Business Machines, Inc. Amiga environments.

Fairly simple commercial multimedia applications in Windows, such as voice enhancements to electronic mail, could appear as early as this fall, multimedia industry observer Nick Arnett said. Arnett, president and chief analyst at Multimedia Computing Corp., said more complex Windows applications such as compact disc-based Help systems are still a ways off.

Windows with Multimedia features Multimedia Viewer, a programming tool that Microsoft said requires no C programming knowledge. Most multimedia programming has been in C, but programming in easier to use environments such as Asymetrix Corp.'s Multimedia Toolbook is considered the key to opening doors to commercial multimedia applications.

"You're not going to see thousands of people who want to develop in C," Arnett said.

Some 1,700 Multimedia Development Kits have been shipped to beta-test users in the development community since November 1990, according to Microsoft. The final production release of the kit ($495) is slated to be shipped early next month.

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Still doing that IS exec shuffle

Bank of Boston, La Quinta execs leave; Chemical Bank revises structure

BY CLINTON WILDER
CW STAFF

The more things change, the more they change. Information systems executive changes continued unabated in recent weeks with the departure of key executives from Bank of Boston and La Quinta Motor Inns, Inc. and the announcement of the new IS executive structure at the merged Chemical Banking Corp.

Charles Hamlett Jr., vice president of IS at La Quinta, was one of 50 employees cut at headquarters in San Antonio. Former Bank of Boston top IS executive Kavin Moody left to join Technology Investment Strategies Corp. (TISC), a market research and CPU residual values forecasting firm in Framingham, Mass.

As expected, Chemical Bank's top IS executive, Edward A. O'Neal, was named to head technology and financial services at the merged Chemical/Manufacturers Hanover Corp. operation. Manufacturers Hanover's executive vice president of information technology services, H. Edward Nyce, had previously announced his retirement. However, Nyce will stay on until the merger is complete.

Kavin Moody left Bank of Boston *for Technology Investment Strategies Corp.*

The latest wave of executive turnover, including the reportedly involuntary departure of United Technologies Corp.'s John Hammitt [CW, Aug. 19] may be symptomatic of the current economic climate.

"There is intense pressure on companies all over the place to reduce costs," said Herb Halbrecht, president of Stamford, Conn.-based IS executive search firm Halbrecht & Associates. "A lot of business executives simply don't believe this 'technology for competitive advantage' stuff. They haven't seen it."

United Technologies, citing recessionary downturns in its major markets of defense, construction and automotive equipment, announced plans last week to cut a staggering $1 billion in expenses by 1993. Plans for IS-related cuts were not specified, and the future of the firm's ambitious data center consolidation project is unknown. The project is $5 million over budget, and no CPUs have been installed in the new data center in Newington, Conn., a company source said.

Details on other companies experiencing IS executive changes are as follows:

• **La Quinta Motor Inns.** La Quinta has encountered financial problems in the cut-rate lodging industry, losing $2.6 million on $120 million in revenue in the first half of 1991. The chain cut 72 employees, or 1% of its overall work force, but trimmed its corporate IS staff by approximately 20%. Jerry Wiggins, vice president of information technology, has temporarily taken over Hamlett's responsibilities.

• **Bank of Boston.** Moody's job changed when Michael Simmons was hired to head the newly centralized IS and operations departments last year. Moody was moved from director of corporate information and technology to department executive for the IS department reporting to Simmons, but he said that was not the reason for his career change.

La Quinta's vice president of IS, Charles Hamlett Jr., *was one of 50 employees cut*

"My job changed for the better," Moody said. "I was one of the strongest advocates of them doing what they did. I didn't have the banking background that Mike did."

Joseph Marzetti, director of technology asset management in Bank of Boston's IS department, is replacing Moody on an interim basis. Moody, 47, was previously corporate director of MIS at Gillette Corp.

• **Chemical Bank.** The new IS management structure lends some credibility to the "merger of equals" billing as O'Neal will have two direct reports from each bank.

From Manufacturers Hanover, Richard J. Matteis, currently in charge of that bank's IS services group, Geoserve, will be responsible for the combined businesses of Chemical's financial services group and Geoserve. Charles R. Walsh, who headed Manufacturers Hanover's retail card services group, will lead the new organization's joint credit-card operation.

Barbara D. Capsalis, currently Chemical's chief technology officer, will coordinate corporate technology activities in the merged operation. Thomas Jacob, who headed Chemical's credit-card, consumer finance and residential mortgage businesses, will be responsible for mortgages, education loans and related consumer products.

Outsourcing

FROM PAGE 1

clustered VAX 6000s will manage the firm's entire data center operations from a DEC manufacturing plant, most likely the facility in Tempe, Ariz. The VAX 9000s, part of the as-yet-unannounced second generation, will feature shared central memory.

"Our monthly operating costs will be at least six figures below what we currently pay," Kilsby noted. "If this works out, a lot of people in the steel distribution industry would give their right arm to have our system. But there's only maybe four distributors large enough to take advantage of this, and they've long since committed to IBM."

Jorgensen's Kilsby *would rather buy steel*

Kilsby characterized the deal as a "three-way development partnership" of his company, DEC and Distribution Architects, Inc. (DAI) in Tempe. DAI is providing the transaction processing, applications and database software for Jorgensen's comprehensive new platform.

"DEC and DAI are both committing resources to guarantee this," Kilsby said. "Technically, it looks like it will work. But we'll really know when I've got my 2,000 users banging away on a central machine."

The $1 billion Jorgensen firm was created 15 months ago from the merger of Kilsby/Roberts Co., Republic Supply Co. and Jorgensen Steel and Aluminum, Inc. Both Kilsby/Roberts and Republic Supply were already outsourcing their main data processing to an IBM 3090 at Litton Industries, Inc. in Chatsfield, Calif., but the Jorgensen operation was running Vaxcluster systems in data centers in Los Angeles, Philadelphia and Chicago.

The outsourcing now done on the IBM 3090 Model 600 will be discontinued after the new arrangement takes hold next year, Kilsby said.

The merger clumped together five distribution systems, five general ledger and recording schemes and other mismatched pieces, said Kilsby, formerly the president of Kilsby/Roberts.

"In order to make some reason of this madness, we decided to look for the software platform that would fit best for all of the companies and then pick the hardware," he explained.

The DAI packages the company eventually chose were available only under VAX/VMS. However, the software modules have to be rewritten to run under DEC's RDB relational database management system and its transaction processing monitor, Application Control and Monitoring System.

Glorioso departs DEC, citing family

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Robert M. Glorioso, the top executive in charge of Digital Equipment Corp.'s VAX 9000 mainframe and production systems business, resigned his high-profile position last week, citing "pressing family concerns" and a need to "get out of the striving mode."

DEC's Information Systems Business Unit, which markets the VAX 9000, fault-tolerant VAXs, Vaxclusters and other high-end systems, will now report directly to William Johnson, vice president of corporate marketing planning. Moving into Glorioso's management role will be Richard Whitman, 44, a 17-year DEC veteran who has been product manager for the VAX 9000.

"The stars are aligned properly for me to say I want to take a break," said Glorioso, 51. "What I'm going to do next, I'll figure out when I get back" from a monthlong vacation.

Industry analysts saw the job shift in another light, saying DEC's top management ultimately blamed Glorioso for the problems the VAX 9000 has encountered in its sluggish and disappointing first year on the market. Yet Glorioso has always been highly regarded by customers and analysts alike for his unusual blend of technology knowledge, market savvy and understanding of user needs.

For mainframe users concerned about the abrupt management shift, DEC officials stressed that the VAX 9000's future is carefully orchestrated well into the 1990s with new generations and increasingly sophisticated software and systems management tools. This fall, DEC will unveil an enhanced VAX 9000 that runs 25% faster than current models, and the next generation of mainframes is already in field testing.

"Nothing is really changing except me," said Glorioso, whose engineering responsibilities for the VAX 9000 were transferred last year to the VAX/VMS Systems and Servers Group. As a vice president and corporate officer, Glorioso will retain his title, although his future role at DEC is undecided.

Ashton-Tate offers amnesty

BY JAMES DALY
CW STAFF

TORRANCE, Calif. — Feeling a little guilty about copying a co-worker's software package? Ashton-Tate Corp. understands.

For the next five weeks, the company will allow software pirates to register previously unlicensed copies of Dbase IV, Multimate Version 4.0 and Applause II at reduced prices.

The amnesty program comes on the heels of several well-publicized raids by the Software Publishers Association (SPA) to catch and fine users of pirated software.

Ashton-Tate's move also coincides with the SPA's efforts to make users aware of the many forms of piracy, including unauthorized duplication, downloading copyrighted software from electronic bulletin boards, enticing dealers to load free software onto hard disks to sweeten a sale and counterfeiting.

"The process by which unlicensed software proliferates within a corporation is generally unintentional," said Max Toy, Ashton-Tate's vice president of U.S. sales and marketing.

Under the Ashton-Tate plan, corporations can schedule one amnesty date per location between now and Sept. 30.

On that amnesty day, any number of users can register unauthorized copies of Dbase IV, Multimate Version 4.0 and Applause II at prices that are approximately 70% less than suggested retail prices: $229 for Dbase IV and $110 for Multimate 4.0 or Applause II. Users receive a software license. Manuals cost extra.

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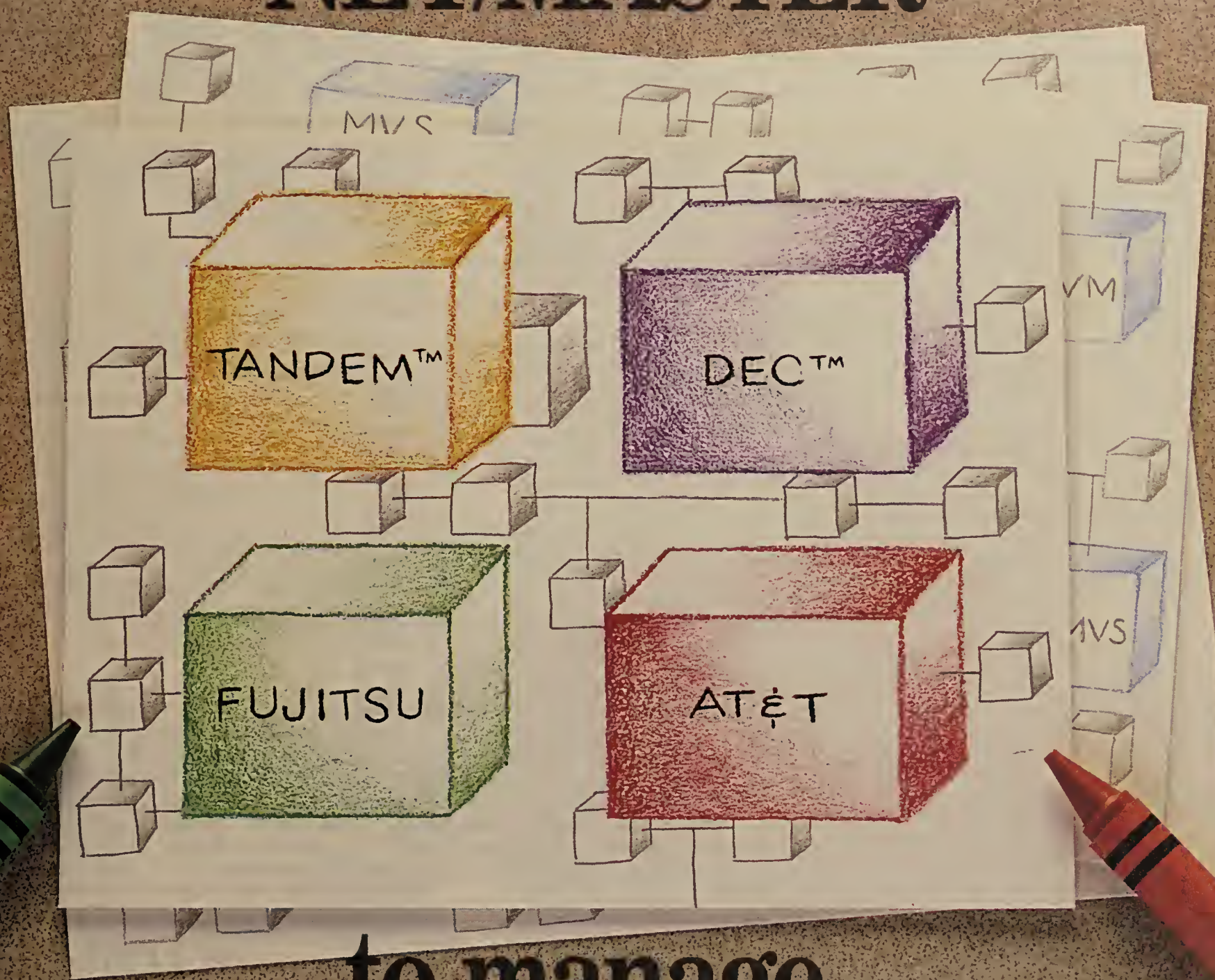

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NEWS SHORTS

IBM needs new CIO

Larry Ford, a longtime IBM executive who was most recently chief information officer and manager of all IBM internal information and telecommunications systems, was named chief executive officer of Systems Software Associates, Inc. (SSA) last week. An IBM spokesman said a replacement for Ford has not been named. Ford's new post will put him in charge of one of software player in the IBM Application System/400 market. The former SSA chief, Roger Covey, left this slot to pursue an academic career, the company said.

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AST chops PC prices

AST Research, Inc. sliced prices 13% to 32% on its Bravo and Premium II lines of 80386SX-based, 20-MHz personal computers, effective immediately. For example, buyers can now get the Bravo 386SX/20 Model 3V for $1,295, 32% less than the former price. The firm also shaved 13% from the price of its Premium II 386SX/20 Model 213V. AST's sales for the 1991 fiscal year topped $685 million. The Irvine, Calif.-based PC maker holds almost 7% of the market for 80386SX machines, according to Storeboard/Computer Intelligence, an industry research firm in La Jolla, Calif.

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CA wins copyright suit against Altai

Computer Associates International, Inc. was the victor last week on at least one count in a lawsuit against Altai, Inc. over its CA-Scheduler program. Although a federal district court in Westbury, N.Y., ruled that Altai was guilty of infringing on CA's copyright, it did not find in favor of CA's claim of trade secret misappropriation. Altai was ordered to pay CA $500,000.

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Publishers appeal Greene ruling

The American Newspaper Publishers Association last week filed an appeal before the U.S. Court of Appeals for the District of Columbia to overturn Judge Harold H. Greene's July 25 decision to allow the regional Bell telephone companies to provide information services. Cathleen Black, the association's president, said the appeal is intended to "preserve competition and to protect consumers by preventing the [Bell companies] from providing information services over telephone lines they totally control as regional monopolies."

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Stratus targets cellular market

Fault-tolerant vendor Stratus Computer, Inc. and EDS Personal Communications Corp. announced last week they will jointly develop a subscriber database system for the cellular telephone industry. With commercial availability set for late 1992, the Home Location Register system will control cellular switches that deliver subscriber services such as call waiting and three-way calling. The agreement marks Stratus' entry into the cellular market.

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ACM plans security seminars

The Association for Computing Machinery (ACM), based in New York, is planning a series of seminars in 12 cities this fall to educate corporate executives about the importance of computer security and strategies for protecting desktop and host information systems. The half-day seminars, which run from Oct. 8 to Nov. 18, will lead up to the fourth annual observance of Computer Security Day on Dec. 2. In addition to ACM's Special Interest Group for Security, Audit and Control, the program's sponsors include Ernst & Young, Adapso, American Express Co. and *Computerworld*.

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Power to the people

Three utilities in Canada and the Pacific Northwest — Alberta Power Limited, Portland General Electric Co. and Puget Power & Light Co. — have teamed up to jointly develop a new customer information system. Called CS/2, the project will be built with the Application Development Workbench from Knowledgeware, Inc.

More news shorts on page 80

On-Line users eye CA for support, service

BY SALLY CUSACK
CW STAFF

Users of On-Line Software International, Inc. products are crossing their fingers in hopes that a planned merger with Computer Associates International, Inc. will not disrupt the excellent service and support they have come to expect from On-Line.

Alexis Christopher, president of 4,000-member Forum International, the Ramis user group, said news of the pending merger took her completely by surprise and added that she had not yet talked with CA regarding its plans for On-Line's Ramis.

"We have had very good rapport with the On-Line employees we deal with," she said.

Sanjay Kumar, CA's senior vice president of planning, promised that On-Line users would see no disruption in enhancement, support and service.

The latest step in the acquisition process was announced last week. CA's wholly owned subsidiary, LWB Merge, Inc., will make a tender offer for all of On-Line's outstanding shares of common stock — estimated at 5.7 million shares.

However, some users raised concerns over CA's loyalty to the acquired product lines. In addition to Ramis, CA would be getting DB2 utility tools, software testing products, operations software and computer-aided software engineering strategies.

Although he does not question CA's initial promises of service and support, Howard Buehler, project manager at Union Pacific Technologies in St. Louis, did question CA's long-term commitment to On-Line users.

"Instead of taking a particular product and making it robust, it almost appears [CA] wants to generate revenue in all segments of the market," Buehler said. "The potential is there to drop what is not profitable."

Other than the coup of gaining more than 8,000 customers, CA could also be preparing to counter IBM's upcoming Data Warehouse product announcement, said Ed Acly, director of software research at Technology Investment Strategies Corp. in Framingham, Mass.

Acly said the embedded technology within Ramis will be a primary ingredient in Data Warehouse.

On-Line's chairman, Jack M. Beardy, maintained that service and support under CA's ownership would be "equal or superior to what customers have been getting from us." Beardy, who is also a third-year medical student at Mount Sinai Medical School in New York, founded On-Line 22 years ago. He currently holds 1.5 million shares.

Growth chart

The proposed merger with On-Line Software International, Inc. is the latest in a history of Computer Associates International, Inc. acquisitions

COMPUTER ASSOCIATES™

1976	CA gets its start by marketing CA-Sort, a mainframe sorting package from CAI Ltd. in Zurich.
1980	CA acquires CAI's assets.
1982	Capex Corp.– CA-Optimizer (Cobol optimization and debugging).
1983	Stuart P. Orr & Associates – CA-Universe (application prototyping tool).
1984	Johnson Systems, Inc. – Operations management software, including CA-Jars.
1985	CGA Computer – CA-Top Secret.
1986	Integrated Software Systems Corp. (Issco) – CA-Dissplа and CA-Tellagraf (graphics software). Software International – Masterpiece financial packages.
1987	Uccel Corp. – CA-Infopoint banking software, CA-ACF2 security software, CA-7 scheduling software.
1988	Applied Data Research, Inc. – CA-Datacom/DB (database management system) and other packages.
1989	Cullinet Software, Inc. – CA-IDMS (DBMS) and other packages.

CW Chart: Janell Genovese

Metro Fiber net races at 100M bit/sec.

BY ELLIS BOOKER
CW STAFF

CHICAGO — Metropolitan Fiber Systems, Inc. (MFS) last week announced a fiber-optic metropolitan-area network capable of supporting 100M bit/sec. speeds and a variety of local-area network protocols.

With commercial fiber networks in 10 U.S. cities already, MFS said its latest offering — commercially available first in Houston — gives it an important head start in what it believes will be a significant marketplace for LAN-to-LAN interconnection services.

The MFS network is based on the Fiber Distributed Data Interface (FDDI) standard, a 100M bit/sec. protocol typically associated with LANs.

MFS becomes the first of the alternative access carriers or Bell telephone local exchange carriers to build a commercial network of this type.

The MFS network, dubbed MFS Metrofiber Multimegabit Data Services (MDS), will compete with the Switched Multimegabit Data Services, a 1.54M bit/sec. to 155M bit/sec. facility being developed by the regional Bell holding companies.

Uncommon applications

Applications requiring such high-speed LAN-to-LAN interconnections are few and far between today.

"The truth of the matter is, other than [connecting two FDDI LANs], nothing drives a 100M bit/sec. backbone. It's nonsensical to say users with a 10M bit/sec LAN would need a 100M bit/sec. backbone," said Thomas L. Nolle, president of CIMI Corp. in Voorhees, N.J.

Nevertheless, MFS President Royce Holland is confident such applications will come.

Holland's conviction is supported by preliminary research results from Connecticut Research in Glastonbury, Conn., which recently surveyed 1,470 companies with a total of more than 17,000 LANs. That study indicated that by 1995 some 28% of LAN-to-LAN links will run at speeds greater than 45M bit/sec. Today, only about 7% of these links run at such speeds.

MFS claims two unnamed customers for the high-speed service in Houston and said it will announce other users in the coming months.

Pricing for the MDS comes in three basic varieties: a "fractional circuit" offering at approximately $500 per site per month and two kinds of native LAN products, using either virtual circuits under the FDDI protocol or permanently allocated bandwidth under a Time Division Multiplexing access scheme for customers who need dedicated 4M bit/sec., 10M bit/sec. or 16M bit/sec. services.

Significantly for users, these prices are about one-fifth the cost of leased DS3 circuits from a local exchange company or an alternative access carrier.

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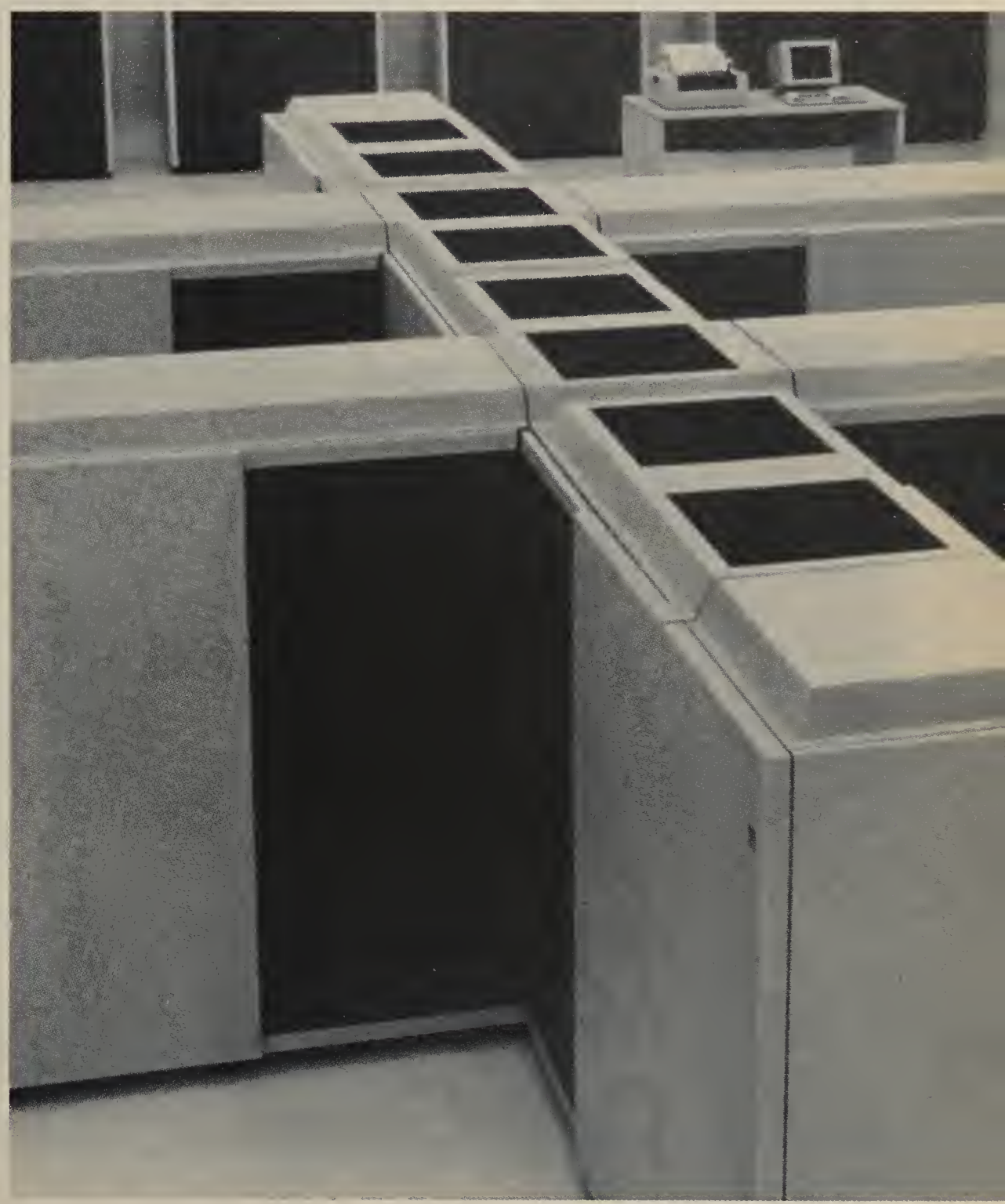

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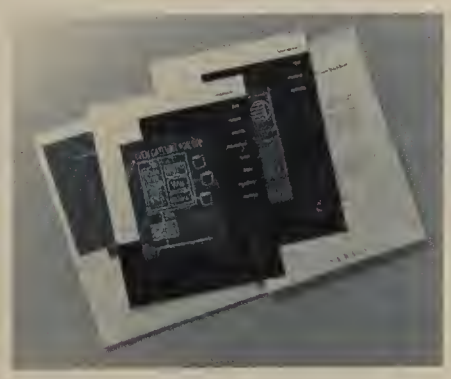
Client/Server For The On-Line Enterprise



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Banyan ties Vines to SCO

BY JOANIE M. WEXLER
CW STAFF

SANTA CRUZ, Calif. — Banyan Systems, Inc. tried to broaden the appeal of its Virtual Networking Software (Vines) network operating system last week when it announced a joint effort with The Santa Cruz Operation (SCO) to integrate Vines with the widespread SCO Unix system.

The nonexclusive relationship, detailed at the SCO Forum conference here, adheres to the Banyan mission to make Vines available on several industry-standard platforms. Banyan Director of Business Development Bill Johnson said the SCO partnership should lead to products in early 1992.

At Pacific Gas & Electric Co., a 13,000-node Banyan shop in San Francisco, the integration of Vines with other Unix versions "opens up the possibility for one server to run Unix applications alongside Vines," said Art Beckman, manager of information technology services. He noted, "Today, separate boxes have to be dedicated [to their applications]."

Vines servers are currently based on a version of Unix System V that contains proprietary Vines extensions. With the integration of Vines with other Unix versions, applications written for those versions will run on the same computer as Vines. This should result in "savings in hardware and the administration and support of that hardware," Beckman said.

In addition, Johnson estimated that 5,000 applications run in the SCO environment, and those applications will become available to the Vines community. A shortage of applications has been one nagging Vines drawback.

The Banyan move parallels efforts by competitor Novell, Inc. to integrate its Netware network with the OS/2 operating system, noted Frank Michnoff, program director of desktop computing strategies at Meta Group, Inc. in Westport, Conn. Michnoff said he expects to see integrated OS/2 and Netware shipping as early as the end of 1992.

Since SCO Unix is based only on Intel Corp. platforms, the Banyan/SCO relationship is expected to be the first in a series. Other deals may let Vines span microcomputer and minicomputer platforms as Netware and Microsoft Corp.'s LAN Manager does today. It also supports Banyan's intent to narrow its focus to network software.

DEC tacks mark on parallel line

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. put its official stamp of approval on massively parallel computing last week with the introduction of the DECmpp 12000 series, a relabeled version of Maspar Computer Corp.'s MP-1 computer line.

As outlined in a business partnership with Maspar announced months ago, DEC will offer eight models of the massively parallel machines as well as a disk array subsystem, a few software packages and a range of services. While all of the current products are Maspar technology, DEC intends to encourage more third-party applications development and eventually add its own software, data libraries and networking technology to integrate the systems into corporate networks.

Shopping list

High on DEC's list for potential commercial sales of these high-speed processors are the automotive and aerospace industries, oil and gas companies and database retrieval firms.

"The most significant aspect for both companies is the greater number of feet on the street promoting these machines," said Jeffrey Canin, an analyst at Montgomery Securities in San Francisco.

The 10 Maspar salespeople now in the field will be joined by at least 60 DEC salespeople trained to support these systems. Priced from $240,500 to $1.5 million, the Unix-based machines use a Decstation 5000 workstation as the primary system console and front-end host for the Unix subsystem. The installed base of Maspar machines is about 45.

The DECmpp systems feature configurations ranging from 1,024 to 16,384 processors with a maximum speed of 26,000 million instructions per second (MIPS). By contrast, a 50-MIPS workstation is considered fairly powerful today.

The entry of a major vendor into this field "strongly illustrates the fact that massively parallel processing in the '90s is not confined to academic research but will penetrate commercial applications," Canin noted. "This is the early stage of planting the seeds for a major push in three to five years."

Christopher Willard, an analyst at Dataquest, Inc. in San Jose, Calif., said the relatively small market for massively parallel processing, now valued at $141 million in revenue annually, is expected to grow at nearly 22% annually to reach $381 million by 1995.

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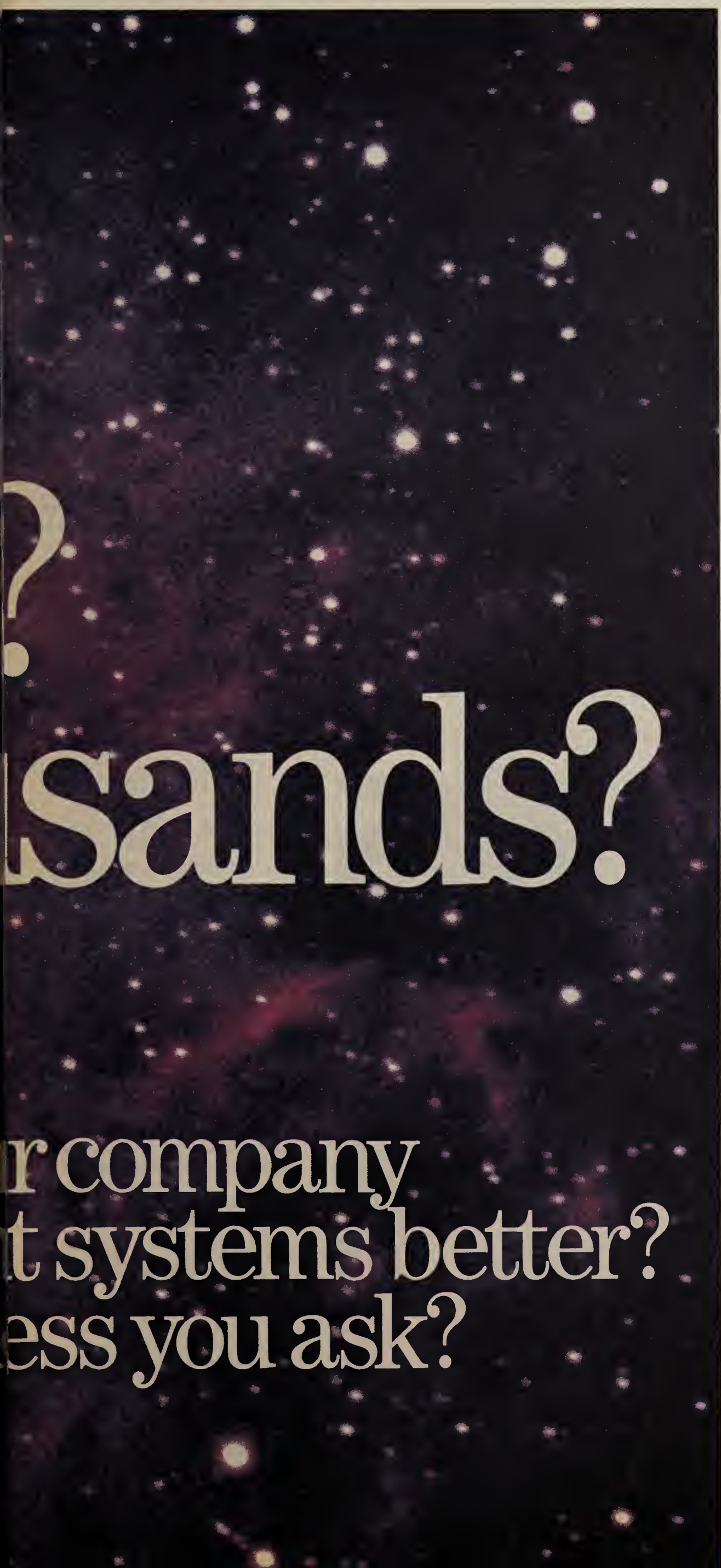

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CA to build software to fill gaps in Tandem line

BY JEAN S. BOZMAN
CW STAFF

CUPERTINO, Calif. — Continuing a two-year effort to expand beyond its traditional IBM mainframe installed base, Computer Associates International, Inc. plans to build a set of systems control software packages for Tandem Computers, Inc. computers.

The CA software, due in 18 months, will be co-developed with Tandem, filling some gaps in Tandem's operations software product line and possibly replacing some current products.

Last week, CA and Tandem executives said that engineers from both companies had already begun work on Tandem-compatible software with functions and features equivalent to those now available in CA's line of IBM mainframe operations software (see story bottom right).

Industry analysts said the announcement underlines a recent push by $1.3 billion CA, based in Garden City, N.Y., to move beyond its traditional IBM mainframe arena. "Having a central point of operations control is key to CA's strategy," explained Charles Phillips, a senior analyst at Soundview Financial Group, Inc. in Stamford, Conn. In October 1989, CA announced Digital Equipment Corp. operations software modules, and this January, CA announced another set for Hewlett-Packard Co. computers, he said.

The plan is to adapt existing IBM software packages for use with Tandem's fault-tolerant processors, based on the proprietary Guardian operating system — and to add unique features where necessary. Working in development and testing labs on both the East and West coasts, the CA and Tandem software teams are expected to adapt existing CA products — and to produce a suite of operations tools beginning in late 1992.

The user interface is expected to be the same for the IBM and Tandem systems, which will allow a single set of operators to control both. "People who use CA's interface can operate the Tandem system just as they would the IBM system," said Michael Katz, product marketing manager at Tandem's Operations Management and Security Group.

Large users of both Tandem and IBM systems maintain separate operations consoles and dual sets of operators. As a practical matter, Portland, Ore.-based Consolidated Freightways, Inc. leaves some elements of administering its Tandem/IBM environment to the IBM mainframe, said Phillip Seeley, CF's vice president of information systems. "You can use your IBM system as an archive by moving transactions across [communications lines] and writing them out on the IBM system," Seeley said.

CA is well-positioned to support more computer systems under its software umbrella because it can extend its CA '90s layered software architecture. "They have to play to their strengths, and one of them is being able to provide a consistent operating environment across different architectures," said Ed Acly, director of software research at Technology Investment Strategies Corp. in Framingham, Mass. "They may already be on second base in this Tandem porting effort," Acly said.

The Tandem-compatible software packages will address five distinct functional areas of computer operations, including storage management, security and control and performance management, according to Sanjay Kumar, CA's senior vice president for planning.

Katz said that users of existing Tandem operations packages can expect continued support.

Bridging the gaps

Tandem Computers sells a number of its own operations software packages, supplementing them with third-party products in some areas. The CA software will cover the product gaps in Tandem's offerings in the following areas:

- **Security.** Tandem sells its own Safeguard package, along with security modules from third-party vendors. CA will write a new security package.
- **Performance measurement and accounting.** Tandem sells its Measure and Guardian Performance Analyzer packages, as well as third-party tools. CA is expected to adapt its PMA/Look on-line performance monitor and its PMA/Chargeback reporting software.
- **Automated Production Control.** Tandem sells its own Netbatch-Plus. CA is expected to modify its widely used CA-7 Scheduler and CA-7 Dispatch packages.
- **Automated Storage Management (ASM).** Tandem has no tape-management packages, offering only third-party modules. CA is expected to combine aspects of its CA-1, CA-ASM and CA-TLMS.

JEAN S. BOZMAN

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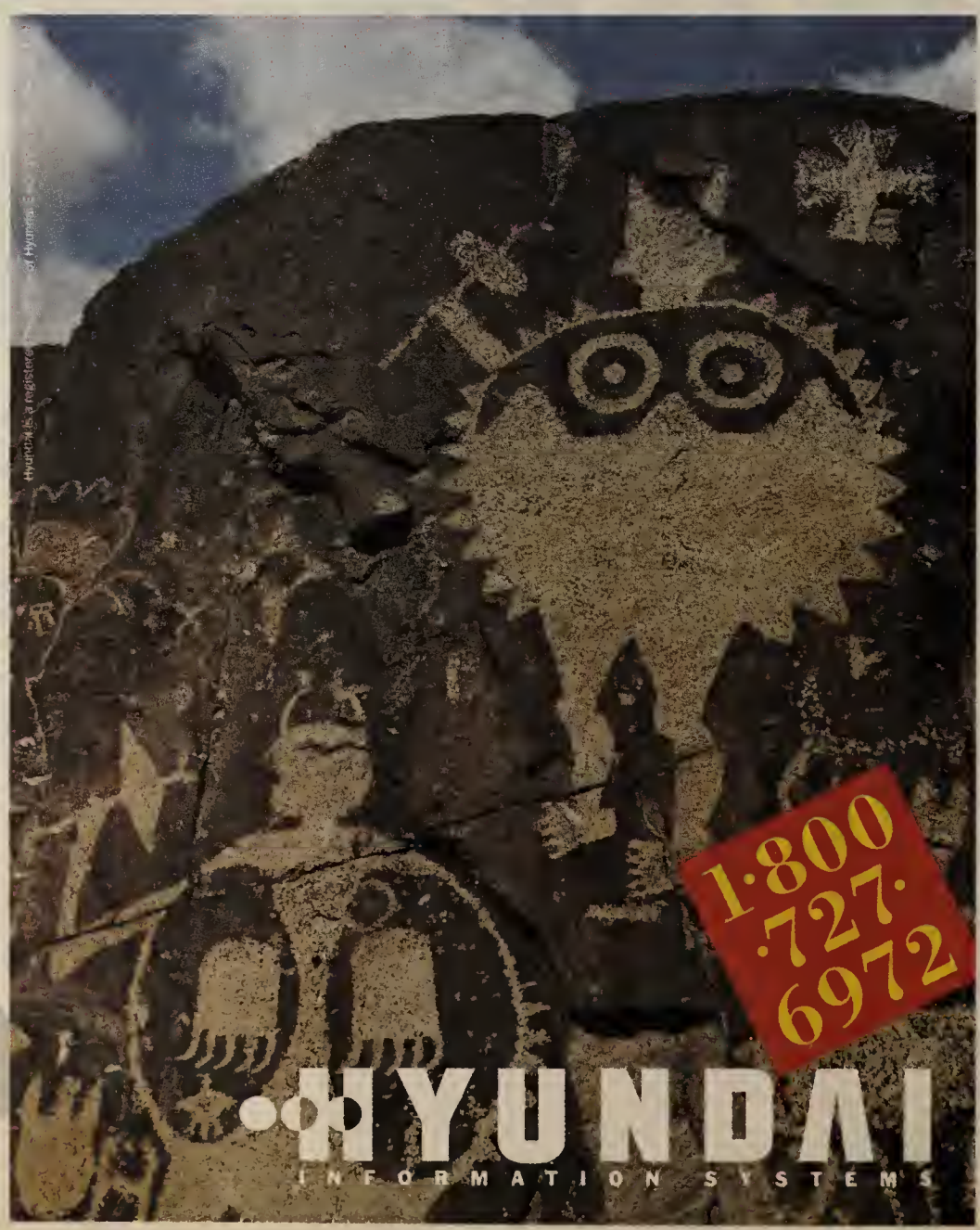

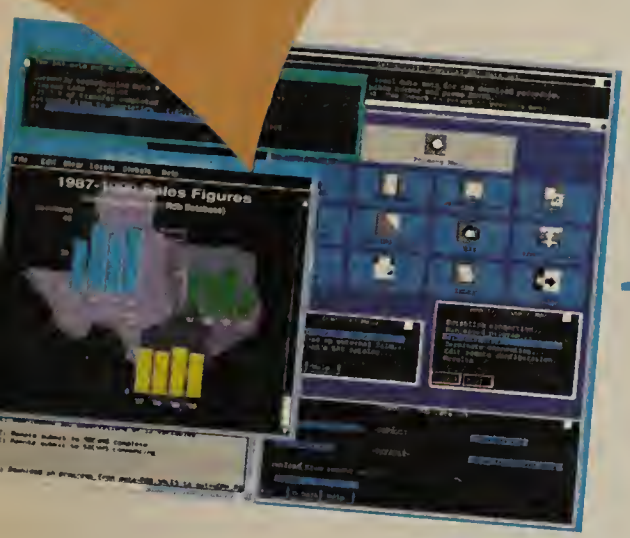

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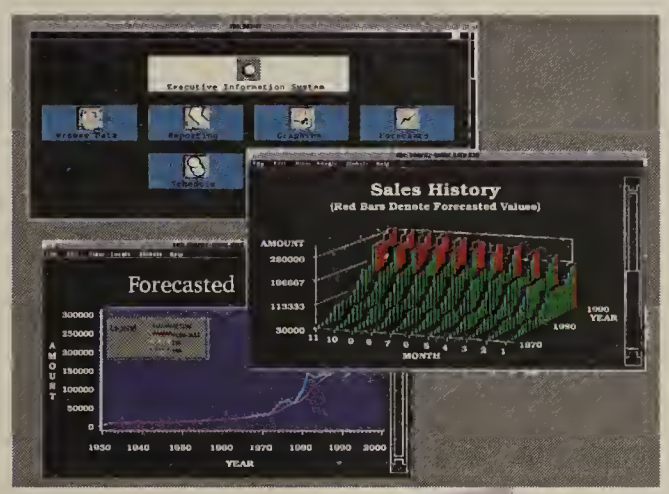

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Bull expands 7000 line

BY SALLY CUSACK
CW STAFF

BILLERICA, Mass. — Bull HN Information Systems, Inc. expanded its 7000 line last week with the announcement of five models and field upgrades for the DPS 7000 midrange-to-mainframe series.

The new models are targeted at midsize firms and departmental operations:

- The DPS 7000/310, supporting 130 users and upgradable to 700 users. Priced at $114,000, including 16M bytes of main memory and four I/O channels.
- The DPS 7000/510, supporting 420 users and upgradable to 2,000 users. Priced at $399,000 with 32M bytes of memory and 10 I/O channels.
- The DPS 7000/560, supporting 2,000 users and upgradable to 4,000 users. Priced from $2,324,800 with 32M bytes of memory and 10 I/O channels.
- The DPS 7000/A4F and A5F, designed to offer upgrade paths to customers with the entry-level DPS 7000/A series. The technology is based on two DPS 7000/A series systems operating as dynamically coupled systems. The A4F consists of an A2 and an A3; the A5F couples two A3s.

When configured with the DPS 7000/A3 model, the A4F and A5F functions can double the power and connectability of the 7000/A3 features. The A4F costs $141,470; the A5F costs $220,000.

The company also took a step toward open systems with Open 7, an extension of the GCOS 7 operating system that provides interoperability for DPS 7000 users across Unix platforms.

Open 7 supports Transmission Control Protocol/Internet Protocol communications to heterogeneous systems over Ethernet networks.

The software is available now and is priced from $13,875 to $52,125, depending on processor configuration.

The A4F and A5F are scheduled for release in October. The other new systems are available immediately.

Group pushes fax standard

BY KIM S. NASH
CW STAFF

BERKELEY, Calif. — If the Faxbios Association's campaign is successful, software developers will build the group's new fax transmission standard into programs, thereby integrating word processing, spreadsheets and other applications with fax machines now on the market.

A coalition of 12 firms, including Hewlett-Packard Co., Wordperfect Corp. and Everex Systems, Inc., recently formed the Faxbios Association, based here, to promote Faxbios, a set of rules for integrating applications with fax hardware, scheduled for publication in October.

If software developers adopt Faxbios, people using common word processors and spreadsheets will be able to simply "hit a menu button and fax" documents over local-area and wide-area networks, said Chris MacKenzie, general manager at Biscom, Inc., a fax server maker and coalition member.

The Faxbios Association is jumping into a ballooning market. Companies worldwide are expected to spend $10.5 million this year on fax boards, machines and services — an increase of 13% above last year's $9.3 million, according to Mountain View, Calif.-based Market Intelligence Research Corp. Next year, the fax market will grow another 15%, topping $12 million, the research firm said.

Richard Holder, Wordperfect's representative to the Faxbios Association, said many Wordperfect users have requested an easier way to fax from their networked personal computers, which is why Wordperfect joined the association.

Users fight off computer virus

OAK BROOK, Ill. — Chemical Waste Management, Inc. had to do a different kind of cleanup earlier this month. The company discovered strains of the Stoned computer virus on six of 30 networked personal computers at its headquarters here, according to Director of Information Systems Mike Hansen.

"The virus has a couple of symptoms," Hansen said. "First, there are aberrations in file retrieval, and eventually you see a message on your CRT that tells you 'Your PC Is Stoned.' " This is followed by a message advocating the legalization of marijuana, he added.

IBM's Virus Scanning Program and a package from Central Point Software, Inc. were used to detect the virus.

Chemical Waste Management has had data security procedures in place for years and has routinely scanned its computers with virus-detection software. "But the intention now is to leave a resident software program in every PC used externally," Hansen said. All the company's PCs and floppies have been given a clean bill of health, he added.

A year ago, the Waste Management, Inc. subsidiary experienced a smaller virus infection at a remote field office.

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PARS Service

"The tutorial takes you through the systems developmenf life cycle very quickly and gives you an overview of the entire toolset."
David A. Egensperger
Programmer / Analyst
The Lubrizol Corporation

"Instructions were very explicit which was extremely helpful and the model we created was easy to relate to."
Michael Young
Programmer / Analyst
Datacorp Business Systems, Inc.

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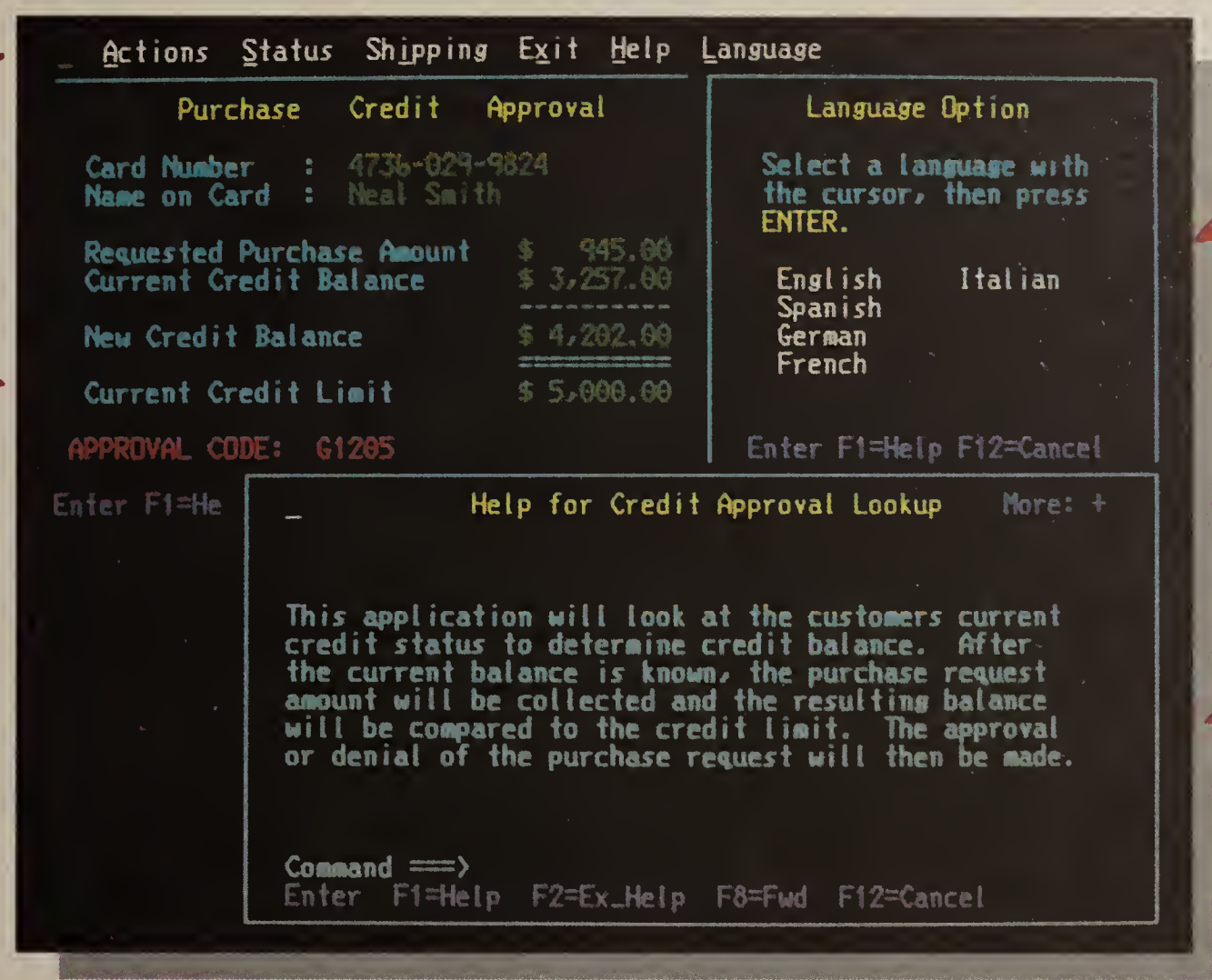

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ADVANCED TECHNOLOGY

Exploring Tinkertoy technology

Having reached the limits of silicon, chip makers are delving into nanoelectronics

BY MICHAEL ALEXANDER
CW STAFF

Semiconductor technology is coming under close — make that microscopic — scrutiny in ways that were unimaginable only five years ago. Every 18 months or so, chip makers manage to halve the physical dimensions of semiconductors while doubling speed and quadrupling capacity.

At the current pace of innovation, there are only a few more stages of improvement left before semiconductor technology reaches its limits, according to Jon Roland, a computer consultant and director of the Vanguard Research Institute in Redwood City, Calif.

As a result, chip makers will need to plumb the depths of nanoelectronics, an emerging realm in which chips and other electronic devices could be assembled one atom or molecule at a time. These devices are measured in nanometers, or billionths of a meter, instead of microns (millionths of a meter), as is now common. To put that in perspective, a human hair is about 10,000 nanometers wide.

Interest in nanoelectronics is "exploding," according to Joseph Demuth, senior manager at IBM's Thomas J. Watson Research Center in Yorktown, N.Y. Nanoelectronics "is still a science more than a technology," he said, but researchers hope one day to bypass the physical limits of current silicon technology.

The goal is to create ultratiny computers and other devices "by assembling atoms and molecules in Tinkertoy fashion," Demuth explained. "Five years ago, I would have said that it would not happen in my lifetime, but the way some people are pursuing it, I wouldn't be surprised by [the year 2000] if people are making small devicelike structures and building computers or processors that work at that small level."

Linda Bleck

IBM scientists, as well as other scientists around the world, are working with an exotic device called a scanning tunneling microscope (STM), invented in the early 1980s by two scientists at IBM Research Division's Zurich Research Laboratory. The STM not only allows scientists to see individual atoms but also moves the atoms with considerable precision.

Recently, a team of physicists used an STM to create an atomic switch, the smallest electronic device ever created and perhaps a harbinger of things great and small (see story at right).

Truly useful devices based on nanotechnology are still a long way off, however. "There is the practical question, 'Why even do it?' because it takes forever," Demuth said. Precisely how nanoelectronic devices would be assembled is unknown, although it is clear that radically new manufacturing methods would be needed.

Skipping steps

Roland predicted that chip technology will leapfrog to an intermediate step in the form of quantum effect transistors. These devices would use single electrons as message carriers and operate under the unconventional rules of quantum mechanics. "There are prototypes already that are activated by single electrons, but they are not truly molecular in scale," Roland said.

Some researchers are thinking beyond solid-state nanoelectronics to the creation of "molecular machines" that are more akin to biological counterparts such as DNA and viruses, according to Roland. "The effects could be spectacular. One could create molecular neurons for a neural network, for example. The difference would be that the molecules could be nearly a thousand times smaller than biological neurons and a billion times more powerful."

Roland outlined an atomic-scale world in which specially designed "nanofabricators" would build other molecules to order.

Gangs of nanofabricators could be used in computers that could repair themselves, for example.

Standing as one

Two weeks ago, researchers at IBM Research Division's Almaden Research Center demonstrated the smallest electronic device ever made — an ultratiny electrical switch that relies on the motion of a single atom.

It is still unclear whether it will ever be possible to build commercially practical atom switches or devices that use them.

However, the demonstration showed that it is possible for switches to have individual atoms as their critical moving elements, the scientists said. Switches are used as the fundamental logic elements of computers and can also be used to store information.

Donald Eigler, Christopher Lutz and William Rudge, the IBM scientists who performed the technical trick, reported in a British science journal that they had repeatedly moved a single xenon atom back and forth across a gap between two electrodes spaced just several atomic diameters apart.

They found that the electrical tunneling current that flowed between the electrodes changed according to the position of the xenon atom. The changes are something akin to turning electric lights on and off by flipping a wall switch.

MICHAEL ALEXANDER

University teams fall short in aerial machine competition

BY MICHAEL ALEXANDER
CW STAFF

Murphy's law recently ran amok on the campus of the Georgia Institute of Technology in Atlanta. Five teams of university engineering students squared off in a competition intended to test the students' ability to design and construct a flying robot capable of operating without human direction.

The robots were required to locate six metal disks using machine vision, retrieve the disks and transport them from one side to the other of a volleyball court divided by a 3-ft-high barrier. The team winning this first Aerial Robotics Competition was to receive $10,000.

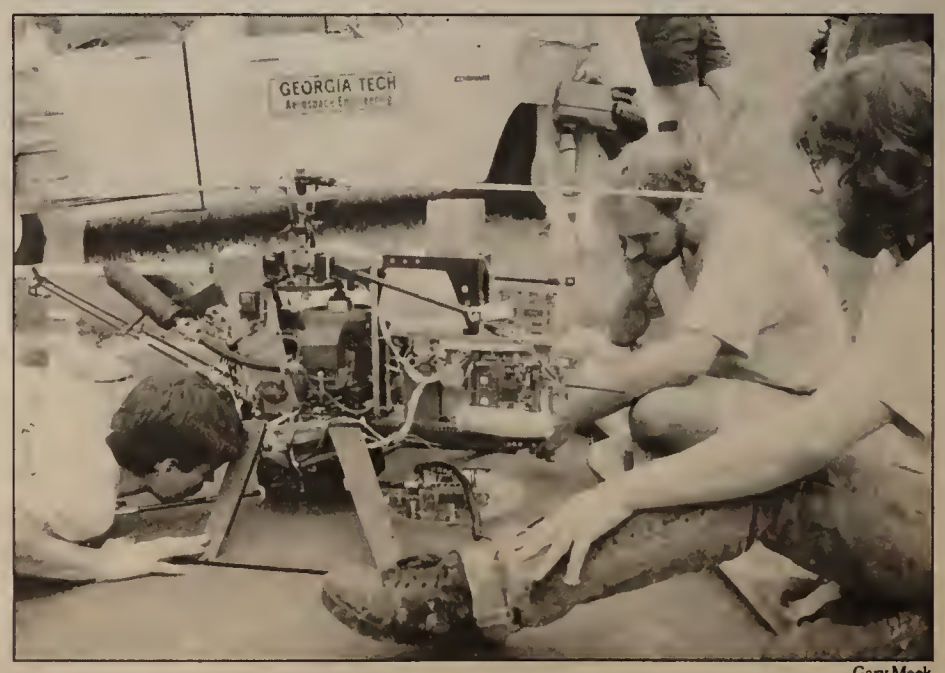
Evidently, the challenge proved too great. None of the robots was able to complete its mission.

Still, everyone went home a winner. The judges split the prize among all five teams, based on how close each team came to carrying out the competition's objective.

The top award of $3,000 went to a team from the University of Texas at Arlington, whose "tail-sitter" robot lifted off the ground and reached the bin where the disks were stored before being knocked off balance by a gust of wind.

Teams from the University of Dayton and California State Polytechnic University each pocketed $2,000. Their robots lifted off but were unable to carry out their missions.

The Georgia Tech and MIT teams each won $1,500 honorable mentions. Neither team was able to get its machine off the ground because of mechanical failures.



Gary Meek

Frustrated students *from the Georgia Institute of Technology examine their helicopter entry to the Aerial Robotics Competition*

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EDITORIAL

Don't back down

It will be months, perhaps even years, before the effects of last week's whirlwind drama in Moscow are fully played out in politics and business. For now, the situation is best characterized as uncertain. Businesses, of course, detest uncertainty. For technology companies, there will be a lot of hand-wringing in the coming months over whether to continue the modest investments they have made in the Soviet market.

For the Bush administration, which generally has not favored technology exchanges of any kind, the situation could provide further evidence that those contacts are risky.

But while recognizing that a risk does exist, we submit that it would be a mistake to let too much caution undermine the role that critical technology can play in the emergence of a new Soviet Union. On the contrary, a vigorous exchange of technology is now even more necessary.

Some examples: Since the advent of Glasnost, dissident media have flourished in the Soviet Union. Many of the thousands of journals that have emerged are produced on inexpensive computerized word-processing or publishing systems that were unavailable just a few years ago. Soviet students now exchange messages with American students over computer bulletin boards. The Soviet government is now considering a massive overhaul of its communications systems that would bring them up to par with those of Western countries and enable developing Soviet businesses to compete more effectively on the world stage.

As free expression takes hold in the East, computers are becoming a key vehicle for connecting ideas and ideologies around the world. It's not too surprising that the first action of the coup government last week was to impose strict controls on the flow of information within the country.

To the totalitarians, the prospect of a people empowered by information is more terrifying than the barrel of any gun. That the people of the Russian republic, hardened by two years of near starvation, would muster the strength to rally around that concept despite the misery they have endured is a testament to how dearly information is held.

Technology offers more than just information to the Soviet people. It also holds hope for a brighter future. The Bush administration has been reluctant to commit financial aid to Moscow. But few would argue that contributing technologies that help a country's economy recover and promise its people a part of the world's fastest growing market would do anything but advance the forces of change now taking hold.

The administration over the years has also understandably focused on the dark side of technology's potential in formulating its trade policy toward the Soviet Union. But now is not the time to cut off the kind of aid that contributes to the enlightenment of the Soviet people.

The popular resistance to last week's coup shows that the thirst for information is more important than the cost of a few machines.

LETTERS TO THE EDITOR

What's in a title?

In regard to a letter recently published in *Computerworld* titled "Users, speak up!" [CW, Aug. 12], I am afraid that some of your readers may be missing the point behind certification.

If they recheck the original article — "Developer certification sparks battle in New Jersey" [CW, July 15] — along with others, they may see a pattern forming. Most of the certifications are created and pushed into being by associations.

These associations then produce certification classes that attendees pay to take part in. I may be getting paranoid, but are the authors attempting to tell us something? The New Jersey bill has a renewable-for-a-fee clause — another new tax?

In business reality, progress and productivity are not measured by titles. A title or perhaps a certification is really a method of sorting individuals into the proper pile.

David Carlson
Senior software developer

Global knowledge

Your insert titled "Adventures In The New Europe" [CW, Aug. 12] was very interesting and informative. We here in the U.S. are starved for vital information about our IS competitors in both Europe and Asia.

As your articles pointed out, communication between European countries is bound to be their No. 1 problem. The old, state-operated Postal Telephone and Telegraph organizations are not easy to change. I think we already knew that to be the Europeans' biggest information systems problem. The Asians are probably up against similar obstacles.

Until they overcome these obstacles, we here in the States can probably enjoy a competitive advantage. But for how long?

There are, however, other areas where I suspect both the Asians and the Europeans are overtaking us. Such areas are computer-aided systems engineering, project management and knowledge-based systems.

How well do they fare in comparison with the U.S.? Could you possibly cover some of these differences in your coming issues? It is important for us to know as much about the competition as possible.

Ernst Bak
Fairfield, Calif.

Beyond IS skills

The letter titled "Driving the wagon" [CW, Aug. 12], which objected to a July 15 Viewpoint article comparing an IS professional to a wagon master ["Get off the wagon train while you have a chance"], reflects the very reason why information systems is so poorly understood and lacks respect.

Mr. Miller seems not to understand that the wagon master was a manager. As such, he did not have to know "techie" matters. He may have, at one time, fixed broken wheels and shoed horses. But, as a wagon master, he did have to know how to manage the overall aspects of the wagon train. An old caveat warns: "A knowledge of programming does not make an IS professional."

A pure programmer is not an IS professional, and let us hope this never changes. Universities, also please take notice!

In my 34 years in data processing, I once programmed, designed systems and read memory dumps. Then, when I grew up, I gave up such childish things and became an IS professional. I did so by learning the management, business and controls aspects of IS.

Richard A. Katzman
Richard A. Katzman Associates
New Cumberland, Pa.

Who's the fool?

I am writing to make a few comments about the Advanced Technology item "Thinking about Turing" [CW, Aug. 12]. I am not sure which is more irksome: the methodology being used or the idea that fooling a human interrogator is basis for concluding that the computer is a thinking machine.

It does not say much about the state of the art in computer thinking if all a computer has to do is pass a P. T. Barnum test with some guy on the street to prove itself.

I would hate to be on an airplane run by a "thinking computer" whose claim to fame is that it "fools some of the people some of the time."

Nella Launi
Systems analyst
Burtonsville, Md.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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Down-home high-tech lessons

Think you know it all about strategic use of technology? Meet a master

RICHARD VIETS

A colleague and I slid into Sonny's Taxi at the Jacksonville, Fla., airport and got more than a ride to our customer meeting downtown — we got a microlesson in the strategic use of high-tech communications for competitive advantage.

The first thing we noticed was that Sonny's windows were open and, this being July in Florida, all the high tech we were hoping for was air-conditioning. That sweaty fear was allayed as our driver started the engine, rolled up the windows and hit the road.

I took a closer look at the driver and saw someone's Southern grandpa, complete with white hair, a hearing aid, a baseball cap and a body that spoke volumes concerning the quality of the local barbecue.

I'm in a high-tech business. I'm used to talking and writing about the strategic advantages of X.400, IBM's Systems Network Architecture Distribution Services and other electronic mail gateways, mail-enabled applications and modern business communications in general. I cheerfully and immediately typed Sonny as someone who might know a good restaurant for a business lunch but was unlikely to have much else to offer.

But when my colleague asked our driver if he took appointments (she had a flight out the same afternoon), I got an unexpected lesson in the high-tech gospel according to Sonny.

"I sure do take appointments," he said, handing back a business card. "I'm the Sonny of Sonny's Taxi. The number on the front there is my answering service, which can reach me on my digital readout pager. The number on the back is this here cellular phone, so you can talk to me direct. If you call the cab phone and I'm not sittin' here, you'll get my voice mail and the phone company will signal my beeper, too."

I took a closer look at this "good ol' boy" and told him installing a cellular phone was a pretty modern idea.

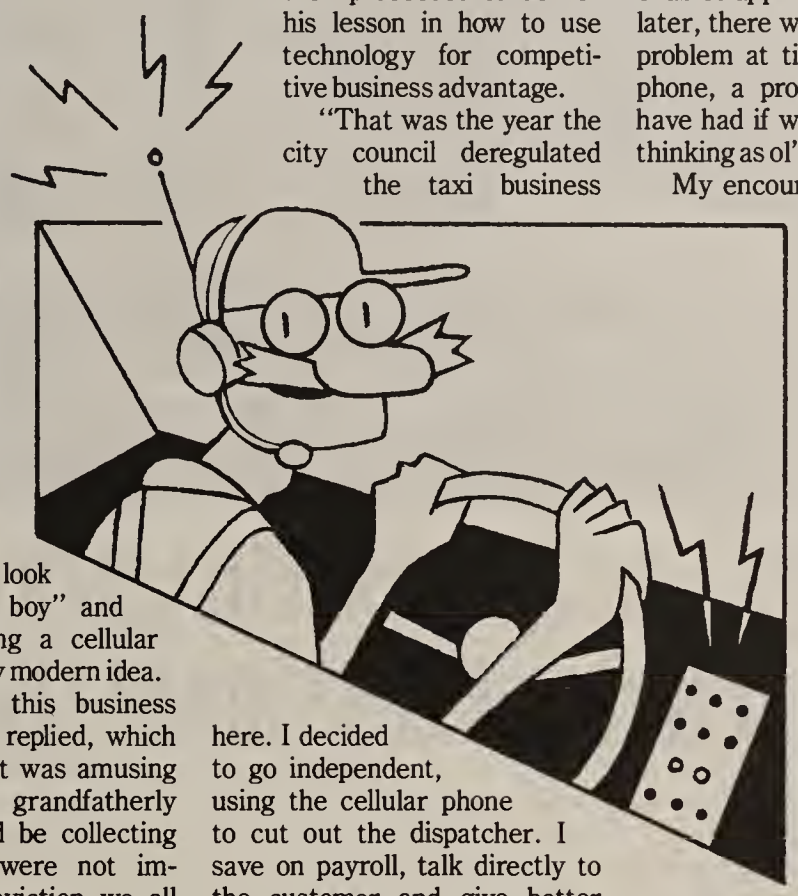
"Can't be in this business without one," he replied, which made me smile. It was amusing to see that even grandfatherly types who should be collecting Social Security were not immune to the conviction we all sometimes get that work would be impossible if we lacked some gadget, even though we got along fine without it for years.

"Sure," I said. "I'll bet you've been driving for years and you've had the phone for, what? A year or two?"

"Nooo, I bought this from Radio Shack in '84. Cost 1,500 bucks — cheapest available then. Today the same one would cost less than a third of that."

I was nonplussed. This geezer had a cellular phone in '84? I don't even have one in '91. He then proceeded to deliver his lesson in how to use technology for competitive business advantage.

"That was the year the city council deregulated the taxi business here. I decided to go independent, using the cellular phone to cut out the dispatcher. I save on payroll, talk directly to the customer and give better service. The council took some convincing because they'd never heard of not using dispatchers. I finally got the city attorney to admit that going cellular met the requirements."



Richard McGuire

Sonny had reacted seven years earlier to changes in the regulatory climate and to a technical advance, coupling a new business opportunity with a leading-edge communications technology to launch a successful new business — a crystal-clear case of the strategic use of communications technology.

My colleague and I used Sonny's services off and on all that day. We'd leave meetings where we talked with customers about our latest offerings in E-mail, X.400, fax gateways and mail-enabled applications and minutes later, there was Sonny. Our only problem at times was finding a phone, a problem we wouldn't have had if we were as forward-thinking as ol' Sonny.

My encounter with Sonny illustrates several important lessons. Any enterprise can potentially benefit from the advantages technology has to offer. The edge technology provides need not be dramatic but can instead be the result of many small but sharp advantages.

I'm the high-tech guy and Sonny's a good ol' boy, but he was dishing out the practical lessons that day . . . and to think I was worried that he wouldn't have air-conditioning!

Viets is marketing director at Fischer International Systems Corp., an electronic mail and security products vendor in Naples, Fla.

New technology isn't always the best answer

LARRY M. SINGER

If new and better technology is the answer, what is the question?

Let's be honest. The question, problem or challenge of the moment doesn't matter. Information systems managers are tempted to give the same "but all we need is the newest gizmo" answer to everything.

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You say that IS spends too much time maintaining existing applications? Just give us your OK for a reverse-engineering tool that is guaranteed to let programmers figure out the worst programs.

Answers for everything

The software and hardware industries have an answer for every problem faced by every IS shop in the U.S. But are they really the right answers?

Let's be honest again. When was the last time you saw a technological wonder solve a real problem without introducing new problems?

That's OK. No need to be embarrassed. We are all guilty of looking for the magic bullet, the silver arrow or the golden key that will bring us happiness and control.

Consider your most critical problem. Put on your managerial hat, close the door, and do what we tell our users: Analyze your problems without presupposing the solutions.

Is the reason for low productivity really inefficient technology? Compare your best performers with your worst performers, and you often see a difference of 50%, 100% or 200%. If they all use the same technology, isn't the difference more likely because of some combination of training, personality, motivation, environment, supervision and direction — areas that are commonly referred to as "people issues"?

Consider the growing maintenance budget. Is the production support staff working smart? Do they share information, hints and knowledge? Do they know the tricks of solving production problems and allocating their time efficiently? If not, what you've got is a management direction issue.

Do project teams understand the detailed business requirements? When new applications fail to meet business objectives, perhaps the problem is an educational issue.

It's easy to ignore the underlying reasons for problems and grasp at the latest technological straw. The search for productivity in the face of tight budgets is the latest example.

Examining sophisticated front-end CASE tools is more glamorous than analyzing the underlying motivational patterns of poor performers. And admiring the potential of object-oriented programming is definitely more fun than performing work-load analyses to match assignments with skill levels.

The point is, though, that managerial actions may answer the question a lot more directly than new technology.

Singer is the author of two books on information technology and the *McGraw-Hill Guide to Communications for MIS Professionals*.

Look on the bright side

MICHAEL B. COHN

You hear it on the news. You read it in the papers. Information systems is in trouble. American high tech has hit the skids. Sales forecasts are bleak, layoffs are multiplying, and the Japanese are eating our lunch.

There's nothing funny about another vendor going belly up or 3,000 more of us losing our jobs. But should we throw in the towel? Give in to the gloom?

Nah. Let's get positive and look on the bright side. We've been through worse. Besides, if you look hard, there's lots of good news about IS.

Here are just some of the positive indicators you may have missed:

- Headhunters in Cleveland report a huge increase in $75,000 per year placements. Unfortunately, half of these were for a company that never lasted three weeks in the same place.
- Technical school graduates are still very much in demand. Studies show a bachelor's degree in IS guarantees at least two job offers: second-shift operator and third-shift operator.
- The U.S. is the leading producer of many high-tech products, such as those X and O printout portraits of famous people.
- Consulting hours are up. One Big Six firm billed more IS hours last month than ever before. Unfortunately, all of these were for the same project, which is now 60 man-years behind schedule.
- There are more lawyers out of work than there are programmers out of work.
- Hardware reliability is at its highest. Operations managers now indicate that systems almost never go down, except on Friday nights at month's end or whenever they have box seats for the ball game.
- IS management no longer considers itself underpaid. In a recent survey, middle managers revealed they were satisfied with their last paycheck, except for those whose last paycheck really *was* their last paycheck.
- So much Cobol will be written this year that there will be a new line of code for every man, woman and child alive today . . . and that's probably who it will take to maintain the stuff.
- By year's end, open architectures and interfaces will allow virtually all systems to talk to one another. And maybe, by the end of the decade, some of them might listen.

Cohn is trying to be a computer salesman in Atlanta.

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James C. Smallman, Burlington's Senior VP of Information Services, says that one of the company's major needs is to act as an extension of its customers' systems. Because those clients use a variety of computing environments, "the ability of SOFTWARE AG products to communicate with different operating systems and hardware is a real plus."

Smallman also extols the speed with which applications are developed using SOFTWARE AG technology. He reports that, thanks to NATURAL and ADABAS, an important project was completed in just 500 hours instead of the projected 1,100. "SOFTWARE AG really offers a better way to manage our business," concludes Smallman.

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SOFTWARE SHORTS

CI surveys RS/6000

In a recent look at IBM's customer base for the Unix-based RISC System/6000 line and the proprietary Application System/400 family, market researcher **Computer Intelligence/Infocorp** found "very little current overlap" in sites installing RS/6000s and AS/400s. One reason is the vast differences in software availability — with AS/400 applications far outnumbering RS/6000 software packages — and reluctance to adopt Unix strategies yet, CI noted.

The largest industry group buying either system turns out to be wholesale/retail, followed by medical/education buyers. More than half (53%) of the RS/6000 establishments fall into the small firm category, and the most popular machine (59% of all sold) is the low-end RS/6000 Model 320. The AS/400's low-end C4 and C6 models are also big sellers.

Executive Software, Inc. in Glendale, Calif., last month issued an unusual guarantee that pits its Diskeeper/Plus disk defragmenter product against an as-yet-unannounced defragmenter from Digital Equipment Corp. Users who buy Diskeeper/Plus now through Sept. 30 can get a full refund if they decide DEC's product is better.

Open systems user groups lead the way

BY JOHANNA AMBROSIO
CW STAFF

Frustrated with the slow pace of standardization in the open systems market, several user organizations are banding together and trying to push vendors toward providing systems that meet their needs.

Two recently formed user organizations are telling vendors exactly what they want in an open system. One, a loosely allied group of 10 large private-sector firms with no formal title or charter, is circulating among vendors a list of technologies they would like to see implemented by 1992 and by 1994. That group includes companies such as Du Pont Co., American Airlines, General Motors Corp. and Eastman Kodak Co.

The second user group, called Open User Recommended Systems, will deal with issues surrounding multivendor systems, such as support and service (see story at right).

Users are making their voices heard in other ways as well. X/Open Consortium Ltd., the open systems consortium, said it will reorganize to give users a greater voice in what until now has been primarily a vendor-driven group. Key moves will include making the X/Open user council the organization's primary decision-making group and establishing an office in Washington, D.C.

Bob Lewin, X/Open's vice president of operations for North America, said the reorganization was brought about by user frustration evidenced by slower sales and the proliferation of user groups. "Obviously, user groups are forming because something is unfulfilled. They want people on the supply side to hear their business needs and react to them," Lewin said.

Group of 10

One of these new groups is the 10-member organization that remains nameless but has been informally dubbed the Group of 10. "We didn't want to establish a formal identity at this point," said James Collins, manager of the open systems program office at Du Pont in Wilmington, Del., and the group's spokesman.

Continued on page 32

Yours, mine & . . .

Make way for OURS, the newest open systems user group to go public. The group, whose acronym stands for Open User Recommended Systems, will address issues and problems surrounding multivendor systems.

"Increasingly, the solutions we buy are from a multiplicity of vendors," said OURS interim Chairwoman Elaine Bond, who is also senior vice president of the corporate systems group at Chase Manhattan Bank. "Education, testing, quality, support and service are all more difficult in that environment. It would be rational to find some way to orchestrate user voices and communicate with vendors to address these concerns."

OURS will hold its first general meeting in mid-October to decide which specific issues it will address.

Among the 14 or so user members of the organizing committee are Avon Products, Inc., Pacific Gas & Electric Co., Shell International Petroleum, Sara Lee Corp., the American Stock Exchange, the Centers for Disease Control and Lufthansa German Airlines. Additionally, some 19 vendors have expressed interest in meeting with the group, Bond said.

She said she hopes that some vendors will join the organizing committee. "We can't dance without them. I am delighted that vendors are trying to behave responsibly and openly."

JOHANNA AMBROSIO

IBM envisions LANs in the repository's future

BY ROSEMARY HAMILTON
CW STAFF

IBM plans to accommodate local-area networks in its repository-based application development strategy, but users will not likely see any results of this plan for some time.

In a recent interview, Robert Libutti, director of market strategy at IBM's Programming Systems Division, said IBM is not moving away from its host-based strategy for application development but recognizes that other environments need to be included. He said IBM may also provide a LAN-based repository someday, but "the world isn't beating a path to anyone's door for that."

Since introducing AD/Cycle nearly two years ago, IBM has stayed focused on host-based application development, which does not reflect that complete application development picture.

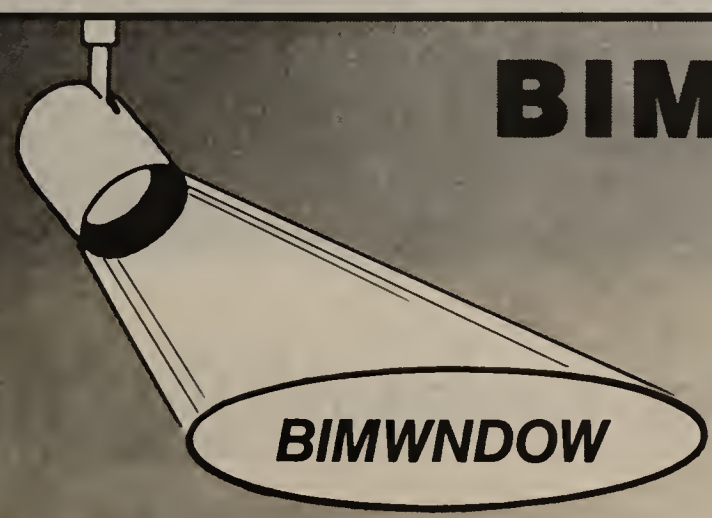
Branching out

Currently, Repository Manager, the central software component of AD/Cycle, is available under MVS, and there are plans to provide it on two other host platforms, VM and OS/400.

"We will see an evolution of the repository function providing a single point of control and then the need for an operational repository-type function," Libutti said. "It won't be as extensive, but is it going to happen? I think it will, but this is not a near-term thing."

Libutti said the goal would be to provide a Repository Manager subset, something he likened to a cache repository, that could be downloaded from a host to a LAN server. With this setup, programmers in a work-group environment could use this local piece of Repository Manager. Then the data could be brought back up to the host and be incorporated in the main repository.

Libutti stressed that it will be key to manage all aspects of development — whether or not it is on a LAN or host — from one central location.



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Nissan motors with AS/400s

Fast tracking of inventory, shipments aimed at speeding sales process

ON SITE

BY JEAN S. BOZMAN
CW STAFF

BENICIA, Calif. — Nissan Motor Corp.'s yearlong conversion of 25 aging IBM 8100 computers ended this month with the installation of Application System/400 computers here and in Houston. The program, which cost nearly $10 million and involved 9,000 hours of reprogramming Cobol applications, is intended to provide a speedy "snapshot" of the inventory of tens of thousands of cars it holds in its lots — and to reduce shipping time to dealers.

Nissan information systems executives said they believe the revamping of computer systems at the shipping and parts distribution centers will make their firm more competitive with Japanese import giants Toyota Motor Corp. and Honda Motor Co. [CW, March 11]. It is part of a larger attempt to optimize every element of Nissan's business in the U.S., which delivers 600,000 of parent Nissan Motor Co.'s 3 million cars annually.

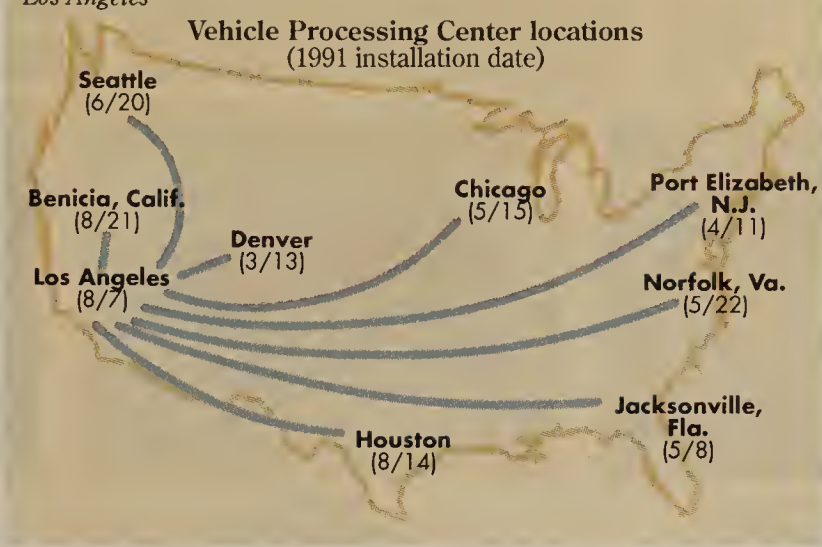
However, sales have fallen off during the recession, dropping in some markets. Ports that used to handle 50,000 cars a year are handling fewer than 30,000, according to the firm.

Nissan's plan is to leverage the AS/400 network to "assign" cars to dealers before those cars are ever unloaded on U.S. docks, 10 or 11 days away from Japanese factories by sea.

That will speed the sales process once the vehicles are unloaded, said Ronald Horowitz, manager of IS at Nissan's U.S. headquarters in Carson, Calif., near Los Angeles.

Nissan's network

AS/400s installed in the past year at Nissan Motor Corp.'s Vehicle Processing Centers are connected by leased lines to Nissan's hub in Los Angeles



Source: Nissan

CW Chart: Janell Genovese

Forward ho!

Until now, Nissan has relied on electronic data interchange (EDI) terminals and faxes provided by truck and railroad firms. By 1993, however, the AS/400s will host EDI software, allowing for better tracking of car shipments and interactive queries with shippers.

That forward-planning ability is part of a companywide project called Market-driven Allocation and Processing System (MAPS), which will be installed in 1992 and 1993, Horowitz said. At the same time, Nissan's 1,100 dealers nationwide will attempt to project market demand for specific models and colors of cars, based on database analysis.

"MAPS is a new concept in which dealers will predict trends in their local markets and ask the factory to build the cars and to ship it," said Ernie Lautsch, vehicle processing center manager at the Benicia port, near San Francisco. The AS/400s would be a key element in MAPS, relaying orders to Nissan's factories in Japan and Smyrna, Tenn., he said.

"We have to keep our inventory turning," Lautsch said. "We'll be able to reach out to sea and assign cars to dealers before they arrive at our docks. Theoretically, we could assign these cars as they come out of the factory in Japan."

After the cars are unloaded, in batches of up to 6,000, they must be sent by truck or rail to dealers around the country. The new system will allow port managers to plan on "piggyback" shipments that consolidate local drop-offs at dealer lots, port managers said. A pilot EDI project has already been launched in Avon Lake, Ohio.

Speed the key

The first result of the conversion from IBM 8100s — replaced because IBM has discontinued software support — was speed. The AS/400 has 24M bytes of main memory and operates at five to 10 times the speed of the 1982-vintage IBM 8100s.

An inventory application that used to take 45 minutes to run on the IBM 8100 can now be run in eight minutes, said Tom Hogan, vehicle processing center manager in Port Elizabeth, N.J. Overnight reports to headquarters are accomplished in a small fraction of the previous time.

A benefit beyond raw processing speed is the ability to link the car processing centers at ports from Seattle to Norfolk, Va., so that shipping managers can exchange information electronically. Before this, managers at the 10 major U.S. shipment centers had to telephone one another or type letters that were sent by fax.

All 25 AS/400s are connected by 9.6K bit/sec. leased lines to the central-site IBM 3090 Model 500 mainframe in Los Angeles. Soon the lines will be boosted to 19.2K bit/sec., Horowitz said.

> "WE'LL BE ABLE to reach out to sea and assign cars to dealers before they arrive at our docks."
>
> ERNIE LAUTSCH
> NISSAN

By year's end, shipping managers and parts managers will get office automation software and personal computers to work with the data generated by the AS/400s.

"The objective is to use the AS/400s to bring the regions the type of office automation that headquarters managers have," Horowitz said.

In coming months, all AS/400 sites will receive IBM Personal System/2s loaded with Microsoft Corp.'s Windows 3.0 and other Microsoft packages, including the Excel spreadsheet and Microsoft Word. The new PCs will bring the shipping offices into the Electronic Age, taking the place of typewriters in many cases.

Despite the complexity of the national network, Nissan users said they expect that the AS/400 will probably be more hardy than the aging IBM 8100s were.

Zeos bolsters system with a RAID upgrade

BY SALLY CUSACK
CW STAFF

When it is crucial that an application runs 24 hours a day, every day, the word "downtime" can send IS managers running for aspirin bottles and antacid tablets.

Zeos International Ltd. in New Brighton, Minn., is such a company. The rapidly growing organization manufactures and sells IBM Personal Computer clones and compatibles, and its MRP II-based software system must be accessible to technicians around the clock.

To ensure data reliability and system uptime, Zeos has installed a redundant array of inexpensive disks (RAID) subsystem from Data General Corp. in Westboro, Mass.

In a RAID configuration, some of the disk resources are redundant so that the array remains operational in the event that a single drive fails.

"We cannot afford to be down for disk crashes," said R. Bruce Marsh, information systems manager at Zeos.

The company is using the High Availability Disk Array (HADA) mass-storage product from DG with 5G bytes of memory, expandable to 30G bytes. The disks are part of a DG Aviion 6220 Server running an Ethernet PC network.

Marsh said that the master console on the RAID subsystem will signal if a drive goes bad, allowing IS personnel to replace it immediately while leaving the operating system and the applications intact.

The primary feature of DG's HADA product is this ability to be repaired under power by the customer without affecting operations.

Combining 5¼-in. disk drives with reduced instruction set computing technology, HADA offers RAID level 5 for environments requiring high-performance, continuous data access and RAID 1 for disk-mirroring capabilities.

Marsh estimated that there are 300 PCs on the network but said that the number changes every day. He said the company has about 650 employees and is growing rapidly.

Zeos looked at similar products before the purchase, and while several vendors offered disk-mirroring capabilities, only DG offered the "hot-swap" replacement feature.

"This is a very new technology, and the RAID capabilities made the entire DG system very appealing," Marsh said. "Overall, the reads are about 80% faster than a conventional disk read, which makes the system faster." He added that most Zeos employees will be doing only reads on the network.

Currently, Zeos has 30 people on the networked system, and Marsh said he hoped to have 300 PCs on it by October.

Noting that the array costs approximately $50,000, he said Zeos thought the price was "real reasonable for this amount of security."

DG's HADA subsystem has been shipping since June. In addition to RAID levels 1 and 5, the system supports individual disk operation.

A five-drive configuration is priced starting at $59,000, and a 30-drive model costs $269,000.

NCR brings out its own RAID

NCR Corp.'s Peripheral Products Division last week took the wraps off one of its own goodies for the NCR System 3000 family of scalable, microprocessor-based computer systems, announcing a line of disk array storage subsystems. The storage systems use a technology called RAID.

The 6292 Disk Array Storage Subsystem uses 3½-in. disks and can support 236M- and 426M-byte drives in its first release. The array of 236M-byte drives yields 1.18G bytes of storage and costs $15,790. The 426M-byte disk gives 2.13G bytes of storage and costs $24,735.

Both versions use NCR's small computer systems interface (SCSI) RAID chip sets and come in a desktop cabinet measuring 7¼- by 13¾- by 16 3/5 in.

The SCSI-2 interface, with its 10M byte/sec. data transfer rate, means that up to seven of the 6292s can be daisy-chained on a single SCSI host adapter, for a total of over 14G bytes of arrayed storage, according to NCR.

ELLIS BOOKER

EDI may save time, money for Defense Dept.

BY GARY H. ANTHES
CW STAFF

LIVERMORE, Calif. — If Uncle Sam drove a car, it would have a "Born to Shop" bumper sticker on it. Now the federal government is poised to launch a program that may some day banish the mountain of paper that accompanies its 50,000 daily purchases.

One bullish government official said the program will return $10 in savings for every dollar invested. Vendors should also benefit: Another official said the pilot program could reduce the time from order to bill payment for many buys from 10 weeks to less than one week.

By 1995, the U.S. Department of Defense hopes to have the commerce system, based on electronic data interchange (EDI) and other standards, operational for the military services and the Defense Logistics Agency, which account for 70% of federal acquisitions. Those buys use 200 million pieces of paper annually.

Lawrence Livermore National Laboratory is building an EDI pilot project for some 50 test vendors at three Defense Department procurement offices: the Wright-Patterson Contracting Center in Dayton, Ohio; the Defense Personnel Support Center in Philadelphia; and Lawrence Livermore, here. That pilot is expected to begin sending data in three or four months.

A spokesman for the U.S. Office of Federal Procurement Policy said the Lawrence Livermore system or one similar to it will eventually handle most federal purchases under $25,000 in value.

At the heart of the Unix-based EDI system — called the Electronic Commerce Operational Network (ECON) — is a "gateway hub" that will bridge hundreds of networks and bulletin boards used by government and businesses into one system. Procurement requests will be routed to commercial information services and will be posted on bulletin boards for access by would-be suppliers via commercial value-added networks.

For security, ECON will use public-key cryptography to encrypt documents, electronic mail and electronic signatures for authentication. Both the RSA Data Security, Inc. and the National Institute of Standards and Technology encryption algorithms will be offered. The system will also use secure, or trusted, versions of Unix. The U.S. Postal Service, which is underwriting part of the pilot program, will register and certify public encryption keys at selected post offices.

According to Lawrence Livermore, intelligent gateway processors at key federal sites will process EDI messages from different makes of computers.

Open systems

CONTINUED FROM PAGE 27

"There are already too many groups out there," he said.

Instead, Collins said, "we wanted to be a catalyst and push open systems along faster than they would be through the existing channels. We're trying to jump-start the process."

Collins said it took the 10 members about three months to develop a document that lists technologies in 25 areas that they would like vendors to implement.

By 1992, the document said, the users would like to see vendors adopt specifications including Posix, the Motif user interface, the X/Open Portability Guide (Version 3), electronic data interchange, Office Document Architecture/Office Document Interchange Format, X.400 and others.

The document, which was mailed to about 100 vendors and standards organizations, also calls for users and vendors to get together in a workshop to be held later this year. Sponsored by the National Institute of Standards and Technology (NIST) in Gaithersburg, Md., the workshop will define a process for how the various vendors would implement the technologies and in what order.

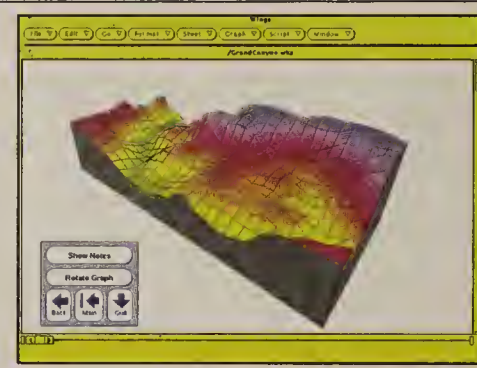
Another participant in the group was William Pater, executive director for information systems management at Merck & Co. in Rahway, N.J. "We're trying to use some of the clout of major users to show that we're seriously interested in seeing some progress toward open systems."

So far, vendor reaction has been favorable, Collins said, although no one has publicly committed to supporting all of the technologies outlined in the document by the specified timetable.

What all this points to is an increasingly activist user community, observers said. "Users have been relatively passive, but they're beginning to change because they look at what's happened," said Judith Hurwitz, vice president at Patricia Seybold's Office Computing Group in Boston. "Users used to trust vendors completely, but the vendors have not been able to deliver the technology users want when they want it. Open systems are the outlet for this frustration and lack of trust."

Al Hankinson, chief of NIST's Systems and Software Technology Division in the computer systems laboratory, said, "This may galvanize the suppliers in a specific direction, and I can't see that doing anything but helping."

ARTS AND LETTERS
Computer Support Corp.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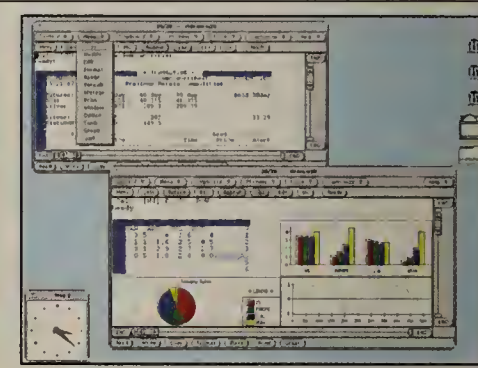
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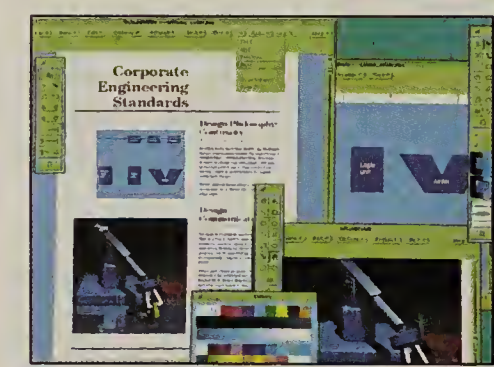
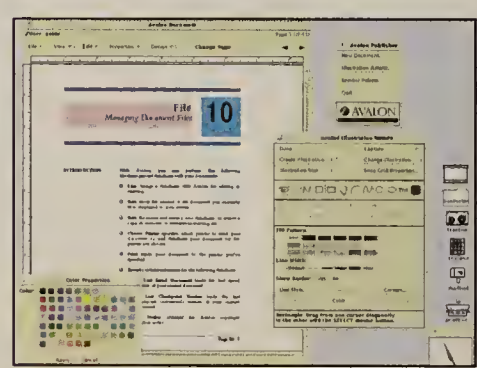


ISLAND WRITE, DRAW & PAINT
Island Graphics Corp.

ASTERIX
Applix Inc.

RAPPORT
Clarity Software Inc.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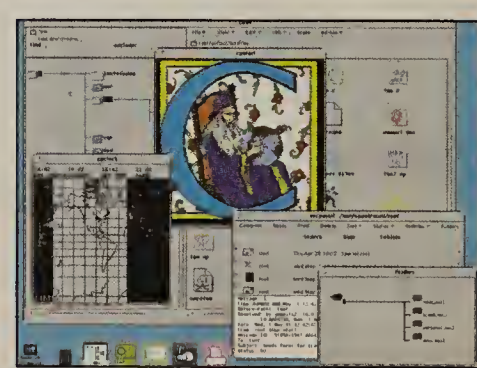
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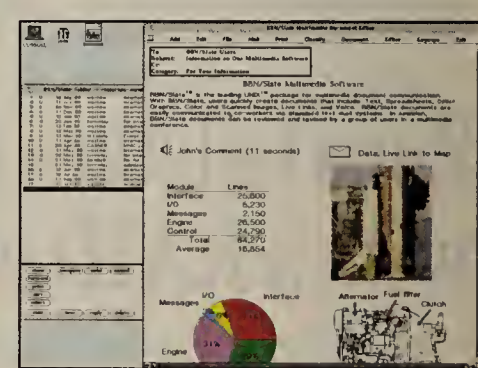
Softscience Corp.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Bechtel puts on Recital

RDBMS and 4GL tool smooth construction of waste facility

ON SITE

BY SALLY CUSACK
CW STAFF

AIKEN, S.C. — Building a nuclear waste processing facility is a delicate business. Engineers and computer experts here at Bechtel-Savannah River, Inc. are painstakingly evaluating pieces of the construction process for the U.S. Department of Defense.

Bill Henderson, a network supervisor at Bechtel, has found a way to centralize data and help the process using Recital, a relational database management system and fourth-generation language (4GL) tool from Recital Corp. in Danvers, Mass.

Henderson determined that there were 25 different personal computer-resident databases belonging to individual work groups throughout the company. In many cases, the information had to be shared across work groups. This required individuals to physically move from group to group to obtain necessary information.

"We had to centrally locate the information in a way that everyone could have access at the same time," Henderson said. "I went to the IS group and told them what I needed, and they had an evaluation copy of Recital they said I could test."

After "playing" with the software, Henderson decided it was exactly what was needed.

The 4GL is completely compatible with Ashton-Tate Corp.'s Dbase 3 Plus applications. Most of the databases slated for conversion were composed in Dbase-type files.

Bechtel is using several Digital Equipment Corp. VAX machines at the site, so it made sense to have the data centrally located on a DEC VAX machine, Henderson said. Using a DEC VAX terminal emulator and the PC server component of Recital, Henderson was able to upload the database files from the PCs to the VAX.

From there, the 4GL's conversion file translated the Dbase file to operate within Recital under VMS.

"Now all the data is centralized on a DEC VAX 8530, and users can access the program simultaneously," Henderson said, adding that all the PCs are now located on a local-area network.

Bechtel was also able to eliminate redundant information with the centralized conversion. According to Henderson, the company has reduced the size of all the databases. There are now about 15 sitting on the VAX.

Most of the 19 users currently hooked into the program have read-only access. The system will eventually accommodate upwards of 150 users, giving them the ability to display different types of database information on the same screen.

Easy implementation

In implementing the Recital program, Henderson said, the only thing he had to do was remap his keyboard to coincide with the definition offered within the package.

"I have an extended keyboard," he explained. "After that, it was pretty easy."

The databases contain open-punch items — specifically, items that need to be accomplished in order to build the waste processing facility. The project is scheduled to go into the 1993-1994 time period and perhaps beyond.

In addition to relational database management facilities, Recital includes object-oriented technology that allows the use of predefined and user-defined objects as building blocks. It also contains a report writer, a screen painter, Help systems and encryption devices.

The software runs on DEC VAX/VMS and most Unix-based systems and requires an Intel Corp. 80286-, 80386- or I486-based platform.

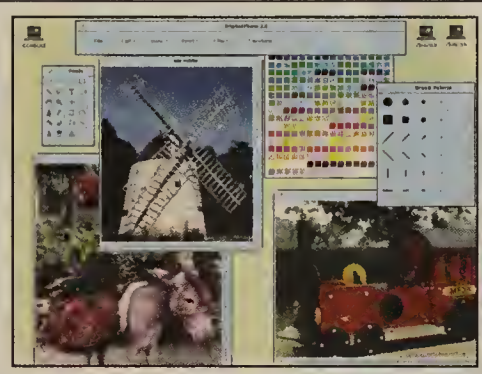
Online RDBMS companion here

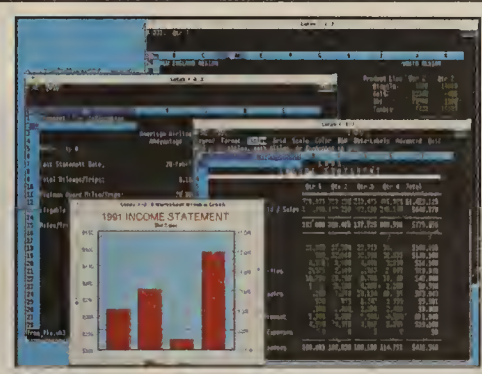
MENLO PARK, Calif. — Two West Coast software tools vendors said recently that they would offer their packages as companion products to Informix Software, Inc.'s relational database management system. Uniface Corp. in Alameda, Calif., said it has modified its fourth-generation language (4GL) for use with Informix's Online RDBMS; the product already worked with the older Informix-SE RDBMS. The porting effort took eight months to complete, according to Uniface Marketing Vice President Anu Shukla.

At the same time, Informix's largest value-added reseller, Fourgen Software, Inc. in Edmonds, Wash., said Informix has agreed to resell Fourgen's computer-aided software engineering tools along with Informix-4GL.

According to Chuck House, Informix's new senior vice president for product development, the move would speed the development of third-party applications for use with Informix's SQL-based relational database engines.

dBASE IV
Ashton-Tate


DIGITALPHOTO
Pectronics Corp.



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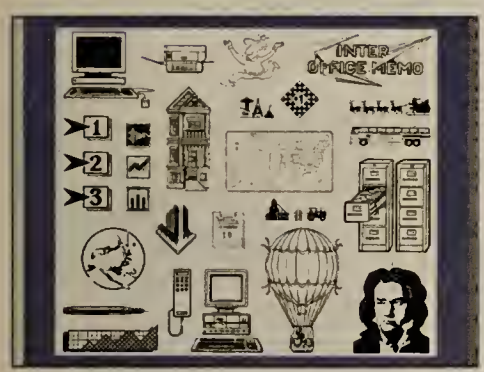
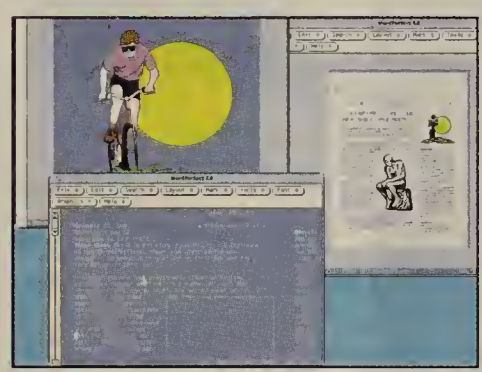
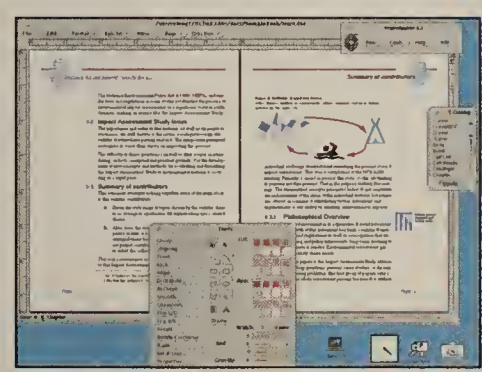
Lotus Development Corp.



CLICKART
T/Maker Company


WORDPERFECT
WordPerfect Corp.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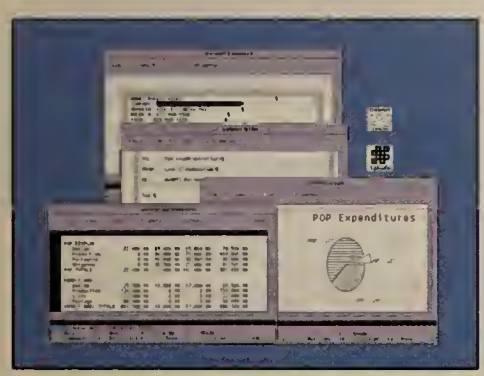
Frame Technology Corp.



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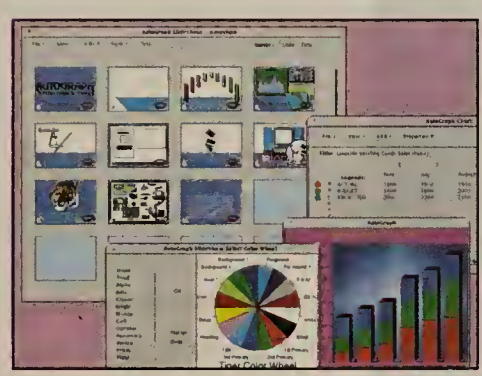
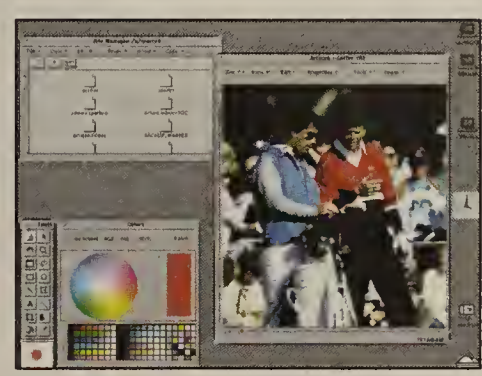

AUTOGRAPH
FICOR Inc.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NEW PRODUCTS — SOFTWARE

Compilers

Cray Research, Inc. has released new versions of its compiling systems for Fortran, Ada and C languages.

The upgrades — the CF77 5.0 Fortran Compiling System, the Cray Ada 2.0 and the Cray Standard C Compiler 3.0 — optimize generated programs for high performance, according to the company.

Users of previous versions can upgrade at no cost.

Cray Research
655A Lone Oak Drive
Eagan, Minn. 55121
(612) 452-6650

Utilities

Phase 2 Consulting, Inc. has announced Sureloc, a security product for use with Dun & Bradstreet Software's Millennium business software on IBM mainframes.

Sureloc provides content-based security. It allows the systems administrator to limit user access to database records by designating maximum viewable values in any database field. Security can be established across multiple databases.

The $16,000 Sureloc module is compatible with query and report writer facilities.

Phase 2 Consulting
21 N. Garden St.
Cumberland, R.I. 02864
(401) 333-4536

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GOAL

HARDWARE

I/O devices

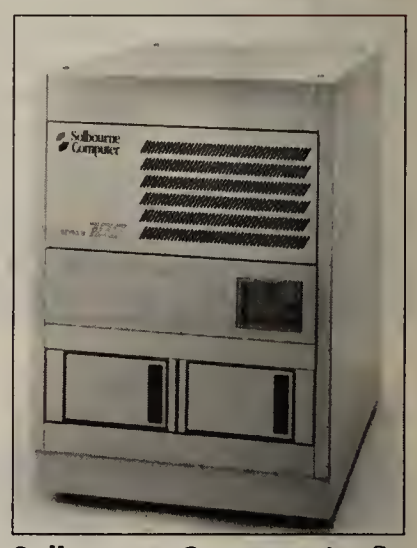
Precision Equipment Photron, a subsidiary of Photron Ltd., has created the Videogenesis/24 line of board-level graphics products for the IBM RISC System/6000 workstation platform.

The Videogenesis/24 is a 24-bit, true-color frame buffer adapter for broadcast-quality video output. It is compatible with Micro Channel Architecture. An on-board serial I/O port connects to video peripherals such as videotape recorders, laser videodisc recorders and animation controllers. The system supports output resolutions of 640 by 480 pixels and 768 by 576 pixels.

Pricing ranges from $2,495 to $3,595, depending on configuration.

Precision Equipment Photron
Suite 103
1324 S. Winchester Blvd.
San Jose, Calif. 95128
(408) 370-1364

Processors



Solbourne Computer's *Series 700 servers include up to four processors*

Solbourne Computer, Inc. has expanded its line of multiprocessor Scalable Processor Architecture-based servers.

The Series 700 Deskside Departmental Server models include up to four processors. The 5/700 version uses a 33-MHz processor, while the 5E/700 version is based on a 40-MHz chip. A VME slot is included in both models.

Pricing for a 5/700 system with one processor and 16M bytes of memory is $21,900. A 5E/700 system with one processor and 16M bytes of memory costs $28,900.

Solbourne Computer has also announced the Multi-Channel Accelerator Board, a device for increasing I/O throughput for the company's multiprocessing systems. The board costs $5,900.

Solbourne Computer
1900 Pike Road
Longmont, Colo. 80501
(303) 772-3400

COMMENTARY

John Dunkle

N-e-x-t spells relief for IS

Let's face it, the position of IS manager is not for the faint of heart. IS managers are confronted with vendor promises to support open systems, multimedia and enterprisewide integrated office information systems.

While the goal of offering these technologies is lofty, in reality, these pledges are the greatest myth perpetrated on the computer-buying public since the birth of the industry. In fact, each vendor's approach to and adoption of various technologies is measurably different from its competitors' because no common definition exists for any of these terms.

However, each IS professional must evaluate how and when each of the suppliers will embrace and support these evolving technologies. At the same time, IS staffs must meet the computing needs of their organizations — driven by users who need to access information and CEOs who want to gain a strategic advantage through the use of IS. In most cases, the requirement is the same: Deliver information to the desktop that has been developed and stored on multiple architectures throughout the network.

Continued on page 39

OS/2 fighting an uphill battle

BY PATRICIA KEEFE
CW STAFF

BOSTON — IBM executives conceded recently that it will take a lot more than just following through on OS/2 2.0 promises to win market share and industry respectability for the offering. The company must substantially broaden OS/2's visibility before it can hope to take mind share — and dollars — away from Microsoft Corp.'s Windows 3.0 environment, two of its leading spokesmen for OS/2 agreed.

IBM took full advantage of Microsoft's absence from the recent Windows & OS/2 Conference here to combat recent published reports that its efforts to support Windows applications under OS/2 have slipped.

First-time demonstrations highlighting support for Standard Mode under Windows 3.0 and pieces of the new Workplace Shell and Programmers Workbench appeared to play to receptive and appreciative audiences. In separate windows, IBM showed DOS 4.0, DOS 5.0, Digital Research, Inc.'s DR DOS 5.0 and eight other Windows applications running simultaneously.

"There were a lot of users at the presentation [who] really seemed to be buying into the vision," said Jesse Berst, who edits the "Windows Watcher" newsletter.

IBM also treated audiences to another look at the Workplace Shell. In addition to providing notebooklike folders, IBM introduced the concept of tear-off menus. Instead of clicking back and forth through layers of menus, users can now save both time and the menu they want by "tearing it off" and turning it into a button that can be placed anywhere on the screen. Other features include the ability to change colors or fonts by simply dragging the desired feature over to the targeted chart or folder.

Separately, IBM executives acknowledged developer discontent with the OS/2 developer's kit, which is available only from

Continued on page 40

Windows still king of the mountain, study says

The combination of Windows 3.0's improved power and Microsoft Corp.'s all-out campaign to promote its graphical windowing environment has clinched many firms' development decisions but has also created great confusion, according to a report by Computer Technology Research Corp. (CTR), in Charleston, S.C.

"Inside OS/2" examines the various versions of OS/2, applications, database servers and networking as they relate to OS/2, as well as the development environment and the migration process.

The report notes that in the race to replace DOS as the dominant desktop platform, Windows 3.0 was the clear winner, at least in the short term. "By the end of 1990, it was abundantly clear that Windows is not the 'transition' environment that Microsoft and IBM [had] asserted; instead, it now appears likely to be the dominant graphical platform of the '90s."

Despite the popularity enjoyed by Windows, CTR cautioned that OS/2 is neither "down for the count" nor dead. The report suggests that OS/2 has already "established" itself as the preferred operating system for mission-critical and server-based applications.

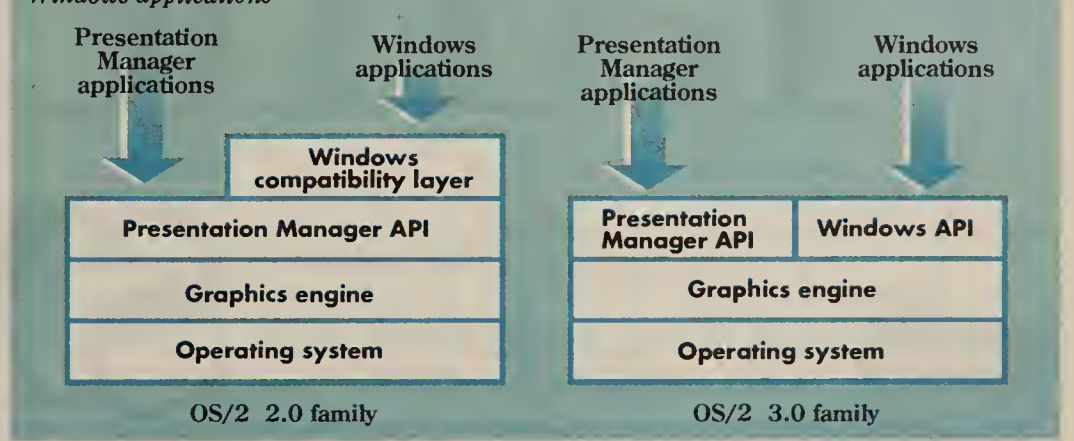
Even so, the report paints a rocky future and hence a cautious picture for managers who are considering a move to OS/2. There are few OS/2 applications today and so, little incentive to use OS/2, the report notes. OS/2's success will depend heavily on support from third-party software developers.

The CTR report also takes Microsoft and IBM to task for muddying the waters with too many releases of OS/2 and for constantly revising the game plan.

PATRICIA KEEFE

Next step

A key element of OS/2 Release 3.0 is supposed to be smoother support for Windows applications



Source: Computer Technology Research Corp.

CW Chart: Michael Siggins

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PC & WORKSTATION SHORTS

Upgrade by Frame

Frame Technology upgraded its popular Framemaker desktop publishing package recently, adding full Apple Computer, Inc. System 7.0 compatibility. Framemaker 3.0 uses such System 7.0 features as Truetype and virtual memory and adds functionality in the areas of table creation and conditional text capabilities. The update will retail for $795.

Users of **Lotus Development Corp.**'s Symphony and various 1-2-3 programs can purchase Freelance Graphics for DOS for the upgrade price of $119 from Aug. 1 through Dec. 31. Freelance for DOS normally sells for $495.

SQLsoft, a Kirkland, Wash.-based **Lotus** Notes reseller, is offering a five-pack system for $4,975, which bundles five Notes units with consulting and integration services. Users purchasing Notes from Lotus must buy a 200-unit package priced at $62,500. Smaller options are available only through value-added resellers.

Citing escalating demand, **Computer Lab International** (CLI) said it has incorporated its low-radiation technology into its entire line of VDTs. "While there have been no conclusive studies indicating that VDT radiation is dangerous, our customers . . . would rather play it safe," said a spokesman. CLI said sales of its low-radiation terminals have risen 60% in each of the last two years.

Windows show heavy on beta versions

Key features of Wordperfect, Harvard Graphics for Windows capture attention of show attendees

BY CAROL HILDEBRAND
CW STAFF

BOSTON — In a show dominated by vendors playing catch-up with Windows versions of popular DOS applications, the recent Windows & OS/2 Conference had more beta-test versions on display than there are freckles on a redhead.

Chief among the beta testers were Wordperfect Corp. and Software Publishing Corp. (SPC), with copies of Wordperfect for Windows and Harvard Graphics for Windows, respectively.

Wordperfect, the acknowledged industry leader in the DOS word processing market with more than 60% of the installed user base, is hoping that its user loyalty will help fend off market erosion as it pushes its tardy Windows product through its final testing stages.

Although there has been some impact from currently available Windows word processors such as Microsoft Corp.'s Word for Windows, users were positively impressed by the Orem, Utah-based Wordperfect's offering.

Windows&OS/2® CONFERENCE

Particularly cited were the customizable button bar that allows users to create their own set of features for the bar, as well as the bridging features that will ease migration from the DOS platform to Windows.

Windows of Oz

SPC's beta-test version of Harvard Graphics for Windows, code-named "Oz," offers such key features as a Slide Sorter, which can be used to view and modify an entire presentation. The Outliner is a text-based tool for organizing ideas, while the Slide Editor allows detailed editing of individual slides.

Templates are available in what the company calls Presentation Styles, and the product supports Dynamic Data Exchange.

SPC, which derives more than 80% of its revenue from Harvard Graphics, badly needs a hit with this product. Its Professional series of word processors has fared badly, and the company acknowledged that it was early with its Infoalliance groupware offering, which has not measured up to expectations.

Other products on display included the following:

- Ventura Software, Inc. announced Version 4.0 of Ventura Publisher for Windows. The company, trying to gain ground lost to rival Aldus Corp.'s Pagemaker, has added serious color capabilities through a series of extensions — Ventura Scan, Separator, Phototouch and Colorpro — to its desktop publishing program.

Edition 4.0 is scheduled to ship early in the fourth quarter and will cost $795.

- Alacrity Systems showcased what it called a Desktop Document Manager that pulls together scanning, faxing and copying in the Windows environment.

The single PC extension board comes with a family of applications that allows users to file documents, send and receive faxes and make copies from within Windows.

Slated for availability in the fourth quarter, the product will retail for less than $2,000.

- Macromind's Action, a multimedia presentation program for the PC running under Windows, makes putting together multimedia presentations a snap, according to the company.

Features include a time line, which offers a simple visual method of coordinating the graphics, motion and sound in a multimedia presentation.

Action needs Microsoft's multimedia extensions to run. The product will retail for $495.

Warming trend seen in Windows DBMS arena

BY CHRISTOPHER LINDQUIST
CW STAFF

Windows-based database management systems are sitting in one of the coolest segments of the steaming Microsoft Corp. Windows software market, but things may be heating up a bit.

At the Windows & OS/2 Conference held recently in Boston, several vendors demonstrated new or updated versions of Windows-based databases. Among them were Acefile from Ace Software Corp., Windowbase from Software Products International and Superbase 4, designed by Precision Software Ltd., which was recently acquired by Software Publishing Corp.

However, new introductions will not necessarily translate into sales, and the Windows database market traditionally has been slow, according to Jesse Berst, publisher of the "Windows Watcher" newsletter.

Why the slow sales?

Several factors may be causing the slow sales. Major database players, such as Borland International, Inc. and Fox Software, Inc., have yet to release Windows-based versions of their products. Also, some users are concerned about the speed and reliability of a Windows database.

Clinton Battersby, president of Measurement Techniques, Inc. in Stoughton, Mass., said he has been looking for a Windows-based database for the past six to eight months, but "there really just weren't any." He did look at several offerings at the Windows & OS/2 Conference, however, and will soon be beta-testing Acefile. He said that ease of use and well-designed local-area network support will be big factors in his final choice.

His current database, Borland's Paradox, is too complex for end users and is not easy to use on a LAN, he said. "We really hate it." He added that Windows database response time should not be much of a concern as long as the LAN implementation is good.

Even though some large vendors, such as Borland and Microsoft, are reportedly working on Windows database managers, Battersby said, he may not bother waiting for their release if he can find a suitable product before then.

John Tarbox, president of Canaan Analytics, Inc. in New Castle, Del., said he was more worried about security problems in Windows itself than with the database managers. He currently writes Windows-based front ends for SQL Server, which means "I don't have to worry about Tetris or Windows Badapp corrupting my payroll," he said. "If I use any Windows database, Windows itself is so prone to [Unrecoverable Application Errors], I'm prone to data corruption."

He said that while Windows is not currently a suitable platform for a mission-critical database, Windows New Technology, which he said he expects to see in 1992, running SQL Server would solve the problem.

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COMPUTERWORLD TECHNOLOGY ANALYSIS

Wordperfect Office beefs up E-mail

Technology Analysis: A roundup of expert opinions about new products. Summaries written by New Products Writer Derek Slater and Senior Editor Michael Sullivan-Trainor.

Wordperfect Office provides electronic mail functions that match any other program's, but non-Wordperfect users will have to get used to some of the environment's idiosyncracies.

Ease of use: For those familiar with Wordperfect, the integration of E-mail with word processing and other key applications makes Wordperfect Office a simple way to access E-mail and connectivity functions.

Administration features: The E-mail features use the same function-key commands as the word processor. Except for basic network administration, it offers little to help E-mail managers avoid time-consuming tasks such as specifying user parameters for each workstation.

Message handling: Wordperfect Office offers a full-featured message handling function that includes the ability to attach multiple files, including graphics, to a message.

Compatibility: Wordperfect Office does not support Microsoft Corp.'s Windows applications.

Value: The package is available in a five-user version for $495 and a 20-user version for $1,495.

Wordperfect Office LAN E-Mail 3.0

Reviews	Ease of use	Administration features	Message handling	Compatibility	Value	Overall
Infoworld 10/29/90	Good	Satisfactory	Very good	NC	Very good	7.3*
PC Magazine 11/27/90	Designed for simplicity	Arbitrary command keys	Full-featured	NC	A boon for users	Major enhancements
PC Week 9/17/90	Cryptic for novices	Excellent installation	A solid system	Promising	Reasonably priced	Solid but unremarkable
Users						
Eric Bendle, Southwest Research Institute	■■	NC	■	■■	NC	Like Wordperfect Editor
Greg Bassett, D. Howard Co.	■■	■	■■	■■	■■	Latest version is best yet
User at large Western manufacturer	■■	■	■■	■■	■■	Happy with integration
John Satterfield, Riley, Defalice	■■	■	■	■	■	Well-integrated with Office
Analysts						
Barbara Babcock, Gartner Group	NC	■■	■■	■	■■	Eventually a very powerful product
David Marshak, Seybold Office Computing Report	■■	■	■	■	■■	Easy to use

Key: ■■ Very good ■■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. **Infoworld* ratings based on 1 to 10 scale.

Vendor financial information

More than 6.3 million users run Wordperfect Corp.'s word processing package. Wordperfect Office is installed at 350,000 sites. The company had $12 million in Wordperfect Office sales in 1990 and projects a 25% increase for 1991. The company had 1990 sales of $452 million, a 61% increase over 1989 sales of $281 million. Wordperfect is a privately held company.

Wordperfect responds

Andrew Ehat, product marketing manager:

Ease of use: Wordperfect is definitely moving ahead with other user interfaces such as Windows-compatible pull-down menus and mouse support.

Administration features: We realize there are some deficiencies with regard to system administration. However, users will see enhancements in the way the product handles directory services.

Microsoft Mail: Solid, less graphical

Microsoft Corp.'s Microsoft Mail for PC Networks 2.1

Reviews	Ease of use	Administration features	Message handling	Compatibility	Value	Overall
Byte 3/91	Good monitor feature	Simple installation	Good	Extensive gateways	NC	Not fancy, works well
PC Magazine 9/10/91	Translating not automatic	Excellent	Flexible	Wide variety of gateways	Very cost effective	Robust, high-powered
PC Week 5/27/91	Only basic GUI support	Good	Good	Good	NC	Good for remote users
Users						
Ken Knowles, Chevron Corp.	■■	■■	■■	■■	■■	Gateways are key strength
Carol Troup, Pacific First Bank	■■	■■	■■	■■	■■	Clean interface, needs filtering
Jim Seligman, Centers for Disease Control	■■	■■	■■	■■	■	Flexible, some deficiencies
Analysts						
David Marshak, Seybold Office Computing Report	■	■■	■■	■	■	Strong, wide-area administration
John Dunkle, Workgroup Technologies, Inc.	■■	■■	■	■	■■	Next version will improve
Scott Haughdahl, Architect Technology	■■	■	■■	■	■	High end too expensive

Key: ■■ Very good ■■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Peter Rogers, Robertson, Stephen & Co.	■■	■■
W. Christopher Mortenson, Alex. Brown & Sons, Inc.	■■	■■

Microsoft Corp. in Redmond, Wash. reported third-quarter (ending March 31) net income of $123.8 million compared with $75.2 million for the same period last year. Sales were $486.9 million for the quarter compared with $310.9 million last year.

Microsoft responds

Kathleen Schoenfelder, product manager:

Ease of use: There are areas where Microsoft will add a lot of value, such as the graphical interface and integration into other applications.

Value: The new pricing structure is more flexible, and for most users, it turns out to be cheaper. The base package includes a lot of things that you have to buy as options with other electronic mail packages.

The box says Microsoft Mail for PC Networks 2.1, but under the hood users will find Consumer Software, Inc.'s Network Courier, purchased by Microsoft Corp. to run under Windows 3.0. Reviewers described the system as strong on remote support and less impressive in its use of Windows.

Ease of use: Creating and sending messages is simple, although *PC Week* said the program is less graphical than other Windows packages. Messages are entered as ASCII text with no formatting tools available.

Administration features: The administrator controls high-priority message routing. A scripting language automates some regular administrative messaging functions.

Message handling: Users can move or copy messages to remote locations. Remote users can also write messages on location before connecting to the local network. Folders are provided for filing messages.

Compatibility: The product has gateways to Message Handling System, X.400 and a wide range of other E-mail services.

Value: Microsoft Mail is fairly expensive at $695 per server plus $395 for five users, $1,349 for a 20-user pack and $22,500 for a 500-user pack. Reviewers said it is a capable package that does not yet fulfill the promise of Windows.

Dunkle

CONTINUED FROM PAGE 35

What if the user was told that there was one single vendor who understood these requirements and was already offering a turnkey system? The system is delivered complete with operating system, bundled applications, a user applications development environment, networking, color support, animation and support for voice and electronic mail in each and every application. And what if this system hid the complexities of the operating system behind a graphical user interface that has turned the head of almost every major competitor?

In fact, one major vendor — IBM — offers this same interface as an option, and the system is supported by major vendors. While IS professionals buy system capabilities, users buy into solutions. This product delivers both today. And in case the reader has not guessed the vendor by now, it is Next.

Recently, Next has been accepted and endorsed by IS professionals in the financial and banking industries as an integral component of their real-time financial and money-management environments. Their decision was based on technological aspects of the Next platform that are just being discovered.

The most advanced capability of the Next system is that it lets users, not programmers, generate complete suites of custom applications within the GUI by manipulating icons and objects. Referred to as end-user object programming, it accomplishes two goals. First, it frees IS resources from having to generate and maintain applications on the workstation, while allowing the user to customize how he wants to individually access and work with information.

Secondly and more importantly, as informational requirements change, users can immediately develop an application within a graphical environment, thereby circumventing the lengthy process of having a similar application developed by dedicated programmers.

An example is now being demonstrated by Next with an application called DB Kit. It lets any Next system access any relational database within the network and present information back to the workstation in a user-definable format. Database sessions, queries and lookups are generated by the user simply clicking on objects and icons. These capabilities are garnering a strong following from major financial institutions such as Union Bank of Switzerland Securities, Lehman Brothers and O'Conner & Associates.

So, if Next really has the technological advantage in the professional workstation environment, why has it not been considered part of the mainstream computer industry?

First, it should be understood that IS looks at the workstation market through personal computer eyes. A major procurement of PCs may be thousands per year for a single company. By contrast, a large workstation procurement is typically no larger than several hundred machines. Workgroup Technologies estimates that placements of Intel-based PCs will exceed 7 million systems this year. By contrast, there will be slightly more than 500,000 Unix-based workstations placed into the same market.

The second problem confronting Next is its own identity. While many have heard of Steve Jobs and Next, few have taken the time to understand the technology and platform. It is shocking news to most that Next offers a fully equipped monochrome workstation for less than $5,000. Even more amazing, its color product lists for less than $8,000. And yes, these systems do include a disk drive, hard disk, Ethernet, keyboard, monitor, operating system, bundled applications and Interface Builder — all the things other competitors "forget" when offering a low-priced system.

Should current Next users be comfortable that they purchased a system from a long-term industry player? Yes, and they may find they have lots of company in the near future as others try Next for the first time.

Dunkle is vice president of Workgroup Technologies, Inc. in Hampton, N.H.

NEW DEALS

Quicksilver joins the Navy

Wordtech Systems, Inc.'s Quicksilver Professional Compiler won a piece of the $650 million Navy Standard Desktop Companion contract. It was selected by the contract's reseller, **Government Technology Services, Inc.** in Chantilly, Va. The contract covers software, peripherals, parts and maintenance for an installed base of as many as 425,000 Zenith Data Systems 248 personal computers.

Computervision Corp. said it will provide more than 160 licenses for its Personal CAD/CAM software family to **New Venture Gear** in Troy, Mich. Separately, Computervision announced it has sold Versacad licenses to the **Cleveland Clinic** and Canada's **Department of Supply and Services**, which is the equivalent of the U.S. Government Services Agency.

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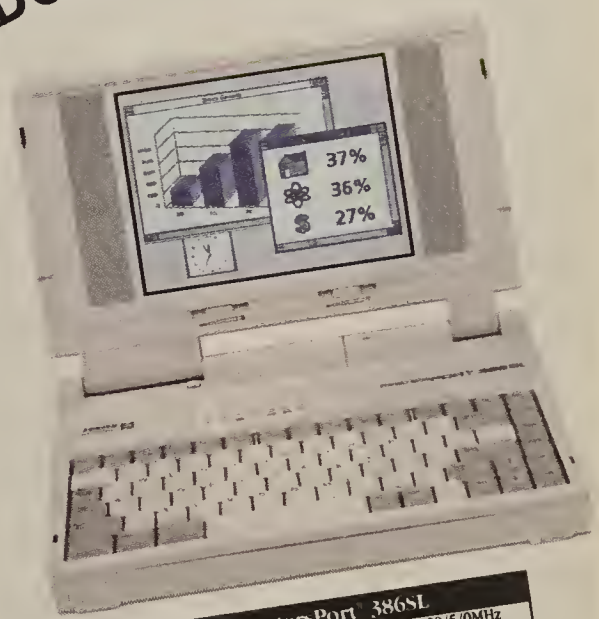

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NEW PRODUCTS

Systems

Bell Computer Systems has begun shipping a desktop computer based on the 40-MHz Advanced Micro Devices, Inc. AM386 processor.

In its standard configuration, the Bell 386WB-40SL features 4M bytes of random-access memory, a 200M-byte hard drive and 64K bytes of cache memory, as well as a 14-in. Super VGA monitor.

It is based on the AT/XT bus architecture.

The cost of the system, which includes bundled DOS and Microsoft Corp.'s Windows 3.0 software, is $2,999.

Bell Computer Systems
6615 Valjean Ave.
Van Nuys, Calif. 91406
(818) 909-3501

Cumulus Corp. has announced the Workbox SX/40 personal computer, priced at $999.

The standard configuration includes a 16-MHz Intel Corp. 80386SX processor, 1M byte of random-access memory, a 40M-byte hard drive and a Super VGA adapter with 800- by 600-pixel resolution. DOS, Microsoft Corp.'s Windows 3.0 and a mouse are also shipped with the system, and six expansion slots are included.

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PC Magazine, 12/11/90 (Ziff-Davis Publishing) "9600-BPS MODEMS: Breaking the Speed Barrier-PC LAN Labs tests seven rapid-fire modems complying with V.32, V.42 and V.42bis standards."

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OS/2

FROM PAGE 35

Microsoft, and user gripes about elusive or conflicting sources of information about OS/2.

Both IBM Personal Systems Division's Lee Reiswig, assistant general manager of programming, and Joseph Guglielmi, general manager of marketing and business development, mentioned a new 800 number for OS/2 price information and discussed options for positioning and marketing the product to users and developers.

Top priority on that list is expanding OS/2's target audience from an almost single-minded focus on mission-critical applications to extend down to the desktop. "We need to [make] 2.0 attractive to the DOS user," Guglielmi said.

In addition to providing support for Windows applications, IBM plans to boost the operating system's popularity by lowering its price. It has already taken a step in that direction by offering OS/2 1.3 plus a free upgrade to 2.0 for $99.

Just finding a copy of OS/2 has been a problem for some users. "It's true that anywhere you look you can find Windows but not OS/2," Reiswig acknowledged. IBM is currently mulling over ways to enter "the two major" distribution channels it uses rarely, if ever, today: software stores and mail order. Users can definitely expect a stepped-up retail presence, the IBM executives said, including availability of a shrink-wrapped OS/2.

IBM will also consider giving OS/2 to distributors willing to add value to the package.

Meanwhile, IBM is telling users with OS/2 1.3 pilots not to wait to get their mission-critical applications up and running. Those applications will run under 2.0, giving users time to port them over to 2.0.

To assuage user concerns about support for non-IBM systems, the two executives pledged to make OS/2 available on as many OEM platforms as DOS is available on today. They declined to be specific, however.

Also, IBM said there are now 90 different independent software vendors that have committed to OS/2 2.0, including Lotus Development Corp., which reportedly has a 2.0 version of 1-2-3/G, its OS/2 spreadsheet, in the works; word processors from Wordperfect Corp. and Describe, Inc.; graphics products from Micrografx, Inc. and Corel Systems Corp.; and Hyperaccess V. Many of these applications will be available when OS/2 2.0 ships, Reiswig said.

IBM will address developer complaints about the Software Developer's Kit and its $3,000 price tag in part through its soon-to-be-unveiled OS/2 Workbench Program.

NETWORK SHORTS

Stratacom OK in UK

Stratacom, Inc.'s IPX fast-packet T1 switch has reportedly been granted frame-relay interface approval in the UK by the **British Approvals Board for Telecommunications.** The certification means Stratacom can install fast-packet systems and frame-relay interfaces in the UK.

Network service provider **Wiltel** — to date the only carrier with frame-relay services available — has reportedly certified **Synoptics Communications, Inc.**'s intelligent wiring hub with a remote Ethernet router module as the first router-in-a-hub configuration to operate with its frame-relay network. Synoptics' router module was developed by **Cisco Systems, Inc.**

Preferred Systems, Inc., a developer of network automation products for Novell, Inc. Netware local-area networks, has announced a distribution agreement with **Vitek Systems Distribution.** Vitek will reportedly distribute PSI:Origen, software that automates the configuration of new Netware file servers, nationwide.

LAN growth means challenges

Careful administration essential to averting network chaos, study says

BY JIM NASH
CW STAFF

Network management is tough and getting tougher, that much is certain. But is the complexity building toward a crisis?

According to a recent study, it may be. Business Research Group in Newton, Mass., found that a majority of companies with 1,000 or more employees are understaffed and technologically outgunned in managing local-area networks. The result, said some executives responsible for implementing and planning networks, could be a chaotic collection of networks trying to communicate with one another.

The growing number of LANs to be connected across an organization has contributed to the urgent need for LAN administration tools, but an even greater contributor has been recent quantum leaps in the technological complexity of LANs, according to Business Research.

Network complexity is rising at a quantum rate, according to Kevin O'Neill, an analyst at Business Research. O'Neill's findings were backed up by several executives at large firms. Users said warning signs of impending trouble include heavy traffic on networks and longer downtime at remote sites.

Development lag

Aggravating the situation is the slow pace at which networking hardware and software vendors are developing management tools. The study, which looked at 400 companies, specifically cited a paucity of tools that help managers plan expansion, integrate disparate systems, detect problems and resolve crashes on remote LANs from a central network management system.

"The industry as a whole is in trouble or out of control" regarding network management, said James Barnes, senior staff consultant at American Express Travel-Related Services Co. in Phoenix. "If it doesn't keep someone awake at night at American Express and other companies, it certainly should." Barnes is involved in advanced technology planning.

Continued on page 46

Tea maker has new network in the bag

ON SITE

BY MICHAEL FITZGERALD
CW STAFF

BOULDER, Colo. — Ollie Ohnstad brought the water to a boil two years ago when he became the information services manager at Celestial Seasonings, Inc., and he is now brewing up a new local-area network for the privately held company.

One of Ohnstad's first assignments was to be the information services representative on a six-person project team composed of top management in sales and marketing, finance and manufacturing at Celestial Seasonings. Part of his job was to take a "long look" at the data processing environment at the firm. The long and short of it was not pretty.

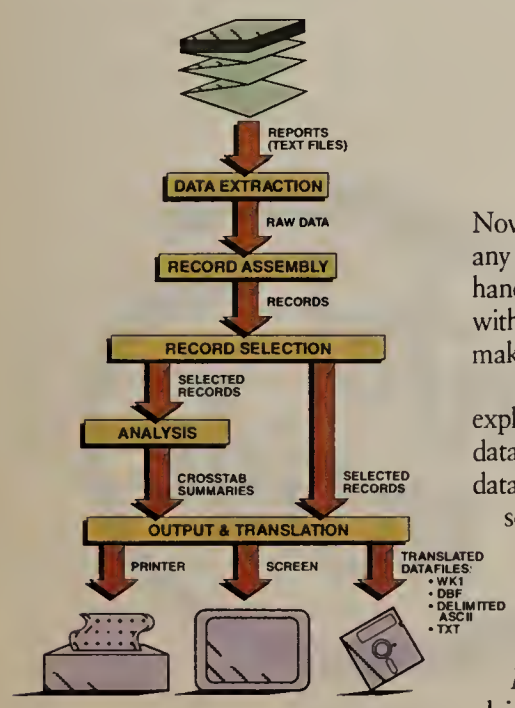
"What we had was woeful," Ohnstad recalled. He inherited a Prime Computer, Inc. 2655 minicomputer that was "tremendously overloaded" and an "ancient" IBM 5520 minicomputer, as well as scattered standalone personal computers. The company had, before Ohnstad arrived, migrated much of its data processing from the IBM to the Prime but was not making effective use of information systems, in Ohnstad's opinion. The Prime machine was, and is, used for accounting ledger functions and sales tracking. The IBM 5520 is still used for personnel and consumer services work but will be decommissioned in 1992.

As part of the committee's recommendations to top management at the approximately $50 million-in-sales company, Ohnstad suggested moving to a LAN. Reasons for the recommendation were a new headquarters building and software.

"The software aspect drove the [decision]," he said. "We

Continued on page 44

Celestial Seasonings *adds the flavor of new technology to its data processing environment by installing a LAN*



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Access for all with Free-net board

BY ELLIS BOOKER
CW STAFF

PEORIA, Ill. — Will citizens use arcane but important information, such as how to appeal a property tax assessment, if it is easy to get?

"I personally was surprised at the popularity of the government information. Some of the things that appear dry on the surface are of the most interest," said Karen Eggert, executive director of the Heartland Free-net, one of the nation's only nonprofit, community-oriented bulletin board services.

Since going on-line in March 1990, Free-net, Inc.'s service has grown steadily and currently logs some 500 to 600 calls per day over its 10 modem lines. The board has received calls from 35 states and from 15 to 20 foreign countries.

However, the emphasis of the service, which uses the Free-net bulletin board systems software created at Case Western University, is distinctly local.

Community calendar

In addition to government listings here, the board contains an 18-month community events calendar as well some 30 question-and-answer forums covering everything from weather and gardening information to a listing of local health and senior citizen resources in the area.

Based here at Bradley University, the Free-net operates on donated hardware and $160,000 worth of funds collected before the system went on-line. Likewise, information is supplied free for its various databases.

Begun with 200M bytes of on-line storage, the board will have 900M bytes when it completes an upgrade from an IBM RT-125 to a Sun Microsystems, Inc. Sparcstation.

Thanks to a gateway on Internet, the national academic data network, Free-net users can access Free-net systems in Cleveland and Youngstown, Ohio, as well as the Cornell University Electronic Information Source. Registered users can also exchange electronic mail with one another and with users on the other boards.

Seeking to provide access for all, Free-net has placed public access terminals in most of the area libraries, as well as in the county administrative building and a Goodwill Industries facility.

However, the Free-net does not permit file uploads or downloads, which may account for why it has not experienced any problems with computer hackers, said Eggert, one of the board's two full-time staff people.

Tea bag

CONTINUED FROM PAGE 41

looked at what was available for what we do."

What he found was Forceshift from Forceshift Corp. in Minneapolis. The package provides a range of software modules and components for running a manufacturing company on a LAN.

"We didn't look at a mainframe solution, just minis or lower," he said. "We're straightforward and simple in what we do."

Money matters

Cost was also a factor. Celestial Seasonings went private 2½ years ago in a leveraged buyout, and cutting costs is standard business practice at the company.

"We kind of constantly cut our IS budget," Ohnstad said.

Since Ohnstad joined the company, it has cut its IS budget by 20%, and he said he expects it will find ways to trim more. He cited measures such as not filling openings when they occur and switching telephone vendors.

According to Ohnstad, who is also responsible for telecommunications functions, much of the 20% cut was made in that area.

In implementing the LAN, Phase 1 of which started in March of this year, Ohnstad integrated the stand-alone PCs already in place at the company, thus reducing the number of machines he had to buy.

In place is a Compaq Computer Corp. Deskpro 386/33 as a file server, with Epson America, Inc. and Advanced Logic Research, Inc. boxes as workstations. Celestial Seasonings installed Novell, Inc.'s Netware 286 as its network operating system, running over Arcnet.

Phase 1 is a LAN-based inventory control system. Previously, Celestial Seasonings combined stand-alone PCs with manual tracking to chart inventory.

The system has been running since March, and Celestial Seasonings is now gauging its effectiveness. If pleased by it, the company will move to Phase 2, a material requirements planning module. Ohnstad plans to then install a customer-order management module and, finally, to put the firm's financials on-board.

He said he expects to finish the whole project in a year and a half, if all goes well.

He is also sitting on another project team to see how best to move a new acquisition, Earth Wise, Inc. into the company. Ramifications of the merger are not clear yet, but the deal will certainly mean more work for Ohnstad.

1975 *Launched the first U.S. public data network.* 1979 *Built the first commercial private packet network.* 1980 *Introduced the first major public e-mail service.*

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1988 *Sprint completes the only nationwide 100% digital fiber optic network. Sprint awarded 40% of FTS 2000 contract.* 1989 *World's first and largest privately-owned*

Frame-relay promise has gaps

Analysts warn users to keep watch for technology's pitfalls

BY JOANIE M. WEXLER
CW STAFF

Companies eager for the benefits of frame-relay products and services should not overlook the shortcomings of the neophyte networking technology, users and analysts agree.

Frame relay has been touted during the past year for increasing throughput in the wide area and paring down costly network connections needed on remote bridges and routers. However, issues such as congestion control and multivendor switch compatibility have been largely unaddressed, industry observers said.

"The demos at the trade shows mislead users because they only highlight frame-relay benefits," asserted Steve Sazegari, director/principal analyst at Dataquest, Inc., a market research firm in San Jose, Calif. "For example, frame relay has not been around long enough to prove its reliability under heavily stressed conditions."

Uncertainty about how the network will perform when saturated is keeping Phil Evans, director of telecommunications at FMC Corp. in Dallas, from making a frame-relay decision. "We're asking what happens as more and more traffic gets imposed on the network, and the answer has been, 'We don't know,' " Evans said. "Until flow control and other issues are better defined, we'll continue to use the technologies we feel comfortable with."

Test of strength

However, Brian Button, manager of product marketing at frame-relay company Stratacom, Inc., said Telecom Finland tested the Stratacom IPX switch for three months running at 90% to 100% network capacity before announcing its Stratacom-supported frame-relay service last week. "It was the most strenuous test of the technology to date," he stated.

Frame relay is a souped-up version of X.25 packet switching; like X.25, it disperses data packets throughout the whole bandwidth pipe as needed to maximize use. However, it also assumes high-quality digital communications lines and eliminates error checking and recovery at each network node, reducing the delays found with X.25.

Hardee's Food Systems, Inc., based in Rocky Mount, N.C., studied frame relay and decided it did not have appropriate applications for the technology, often cited as "bursty" internetwork traffic.

"From what I hear, frame relay is not very efficient for bridging Ethernets," said Price Craddock, telecommunications analyst at Hardee's. He said that because frame relay's best candidates would be companies interconnecting local-area networks over a mesh topology and Hardee's runs a point-to-point star network, "many of the benefits are not there for us."

Stratacom's IPX switches are used in Wiltel's frame-relay service, which is now available, and will also be the backbone of imminent services from Compuserve, Inc., BT North America, Inc. and U.S. Sprint Communications Co. However, several other vendors have announced frame-relay interfaces for their T1 multiplexing equipment, and as of today, no interface standard for interoperability among switches exists.

This results in what Sazegari described as a "closed-capsule, frame-relay environment" — one of particular concern to the 30% of Fortune 1,000 firms that plan to implement hybrid public/private frame-relay networks, according to Forrester Research, Inc. in Cambridge, Mass.

Button conceded that "today, you could hook up two networks [from different vendors and/or carriers] and transfer data across them. What you wouldn't get is the passing of management and status information between them."

Button is Stratacom's delegate to the Frame Relay Forum, a 53-vendor consortium working with standards bodies to fill in gaps in the technology. He said a white paper for laying multivendor interoperability groundwork will be developed in a forum meeting next week and should result in products by the first half of 1992.

Words of caution

Telematics International, Inc. in Ft. Lauderdale, Fla., announced last week that its X.25 switches will support frame-relay interfaces by year's end. Telematics Senior Vice President Lawrence Cattell acknowledged, however, that "there is no doubt that users have some consternation about how quickly to get involved with the technology." Cattell cautioned users to consider the following:

- How effective is your network to date? Improvements might be achieved simply by better management of existing resources.
- Can you support more users with better performance at the same cost using frame relay, compared with traditional circuit switching?
- You must intimately understand the traffic on your network in order to measure how much you will improve throughput.
- Since frame relay presupposes high-quality transmission, companies with network segments in other parts of the world might not benefit.

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transatlantic fiber optic cable completed. 1990 *Sprint announces the first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.*

LAN growth

FROM PAGE 41

"A lot of companies don't have the personnel to handle all the administrative tasks" imposed by large numbers of big networks, according to Bill Riess, supervising engineer at Chicago's Commonwealth Edison. Riess branded as "alarmist" those who see disaster on a horizon increasingly populated with LANs carrying mission-critical applications.

He did not, however, entirely discount the possibility of large-scale disruptions in the near future. Riess said network management will evolve into a strategy of local administrators working with a small portion of an entire company's network.

Barnes said problems with integrating networks and minimizing downtime could present the industry with "insurmountable" dilemmas within the next three years unless vendors can deliver comprehensive management tools.

A RECENT STUDY found that a majority of companies with 1,000 or more employees are understaffed in managing LANs.

"Where's the beef here?" asked Sheldon Laube, national director of information and technology at Price Waterhouse in New York. Laube said he lambastes networking companies on a regular basis for promised management tools that do not materialize.

Large companies need more highly skilled technicians at each remote site to keep networks up, Laube said. That is an expense companies want to and should be able to rid themselves of with remote-management tools, he explained. "We want to drop in a machine that works by itself.

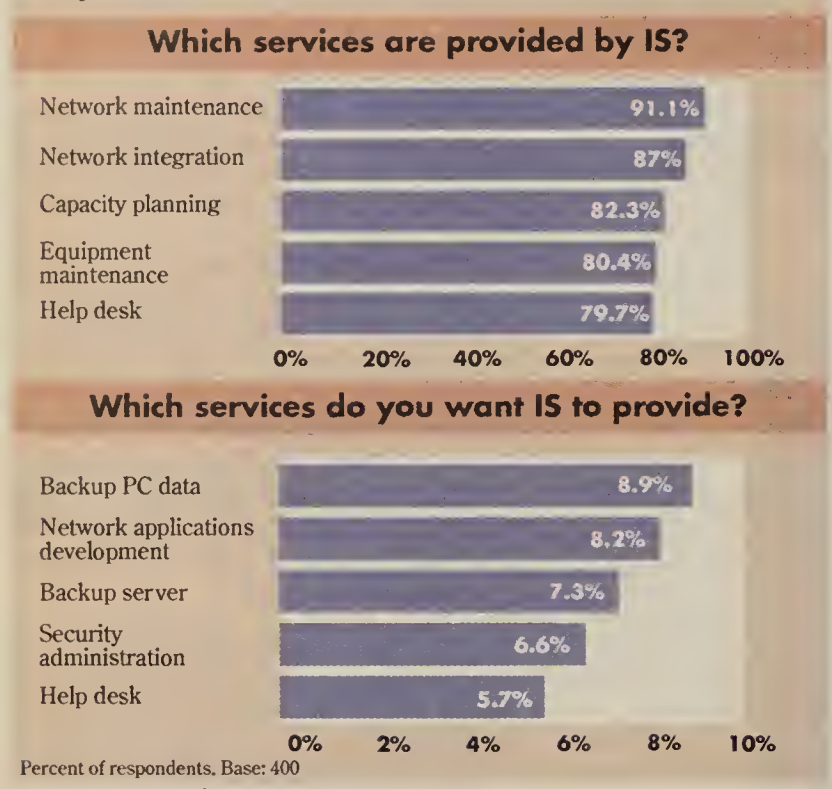
"Try diagnosing a network problem [over the phone] with somebody who is used to dealing only with Lotus' 1-2-3, DOS and Wordperfect," Laube said.

According to Barnes, American Express is staving off potential problems with a lot of planning. While there are tens of thousands of users on the company's networks, only a few mission-critical applications have been installed on the systems.

As these applications are loaded and the networks are linked, Barnes said, executives are actively troubleshooting possible future problems. Riess said the same thing, citing Commonwealth Edison's strategy of starting from scratch with networks and planning for large-scale use and problems. Too many companies, he said, have played down the role that personal computer networks will play in relation to mainframes.

Wish list

The support services IS provides and what LAN managers want are not always the same



Percent of respondents. Base: 400

Source: Business Research Group

CW Chart: Janell Genovese

Better links from 3Com

BY JIM NASH
and ELISABETH HORWITT
CW STAFF

3Com Corp. last week announced products that are said to link Apple Computer, Inc. Macintosh and Micro Channel Architecture (MCA) personal computers over 10Base-T local-area networks. The resulting products are said to save Macintosh users $100 and MCA users $75, compared with purchasing the necessary adapter and transceiver products separately, 3Com said. 10Base-T is a version of Ethernet that is said to support 10M bit/sec. transmission over ordinary twisted-pair wiring.

The Etherlink/NB TPX is said to include all connectors necessary for linking Macintoshes over 10Base-T LANs based on twisted-pair wiring and thin and thick coaxial cable. It is priced at $670.

The Etherlink/MC 32 TPX, priced at $999, is said to provide the only 32-bit bus master 10Base-T solution on the market today. Both products are scheduled to ship in October.

3Com also announced that it is shipping a 10Base-T adapter card for Ethernet-based Novell, Inc. Netware networks with an integrated Netware boot programmable read-only memory chip. The chip allows network managers to remotely boot workstations — both those with disk drives and diskless machines. Called the NW1000-TP, the card sells for $259 each and costs $1,295 in five-board packages. 3Com introduced an eight-bit Ethernet coaxial card last spring.

NEW PRODUCTS

Local-area networking hardware

Cayman Systems, Inc. has introduced the Gatorcard line of Ethernet adapter cards for Apple Computer, Inc. Macintosh systems.

The line features 16 cards supporting connection of Macintosh II, SE and SE/30 models to 10Base-T, thick- and thin-wire Ethernet local-area networks. The cards load transmitted data directly into system memory to increase transmission speed, according to the company. Space for a math coprocessor is included on each Gatorcard.

The cards are priced at $499, or $599 with a Motorola, Inc. 68882 coprocessor included.

Cayman Systems
University Park at MIT
26 Landsdowne St.
Cambridge, Mass. 02139
(617) 494-1999

Avatar Corp. has unveiled two 16/4M-byte Token Ring adapter boards for Apple Computer, Inc. Macintosh II and SE/30 computers.

The Macmainframe 16/4 Token Ring Workstation connects a Macintosh directly to the Token Ring network. It is bundled with the company's 3270 emulator software for mainframe communications and is priced at $1,395.

The Macmainframe 16/4 Token Ring Gateway connects multiple Macintosh systems to the network via a Macintosh server. It also includes emulator software. Pricing is $2,495 for eight host sessions.

The boards can be upgraded from 4M- to 16M-byte network capacity by either software or hardware switching.

Avatar
65 South St.
Hopkinton, Mass. 01748
(508) 435-3000

Local-area networking software

Mainlan, Inc. has begun shipping a peer-to-peer Ethernet network that runs both DOS and Microsoft Corp.'s Windows 3.0.

Mainlan for Windows offers features including file transfer, hard disk and printer sharing, file and record locking and electronic mail. It provides a graphical interface with Windows icons to facilitate ease of learning, the company said. DOS and Windows workstations can be concurrently supported.

Pricing is $249 for the software and $199 per adapter card. A starter kit including cable, adapters and software for connecting two personal computers costs $699.

Mainlan
Suite 135
1215 N. Highway 427
Longwood, Fla. 32750
(407) 331-4400

Micro-to-micro

Xcom 6.2, a file-transfer software package from Spectrum Concepts, Inc., now supports IBM RISC System/6000 workstations running the AIX operating system.

Xcom 6.2 allows users to share files and jobs over an Advanced Program-to-Program Communications/LU6.2 session. The product offers unattended file transfer, remote printing and remote job entry facilities.

The product costs from $2,160 to $10,500, based on the CPU size.

Spectrum Concepts
150 Broadway
New York, N.Y. 10038
(212) 766-4400

Gateways, bridges, routers

Amnet, Inc. has announced a router for connecting Novell, Inc. Netware networks over the Amnet Nucleus 7000 series wide-area networks.

The company's Novell local-area network router consists of software and an Ethernet or Token Ring adapter module that plugs into the Nucleus 7400 Network Switch.

The Nucleus 7000 network provides routing services such as load balancing and adaptive routing to avoid network congestion, the firm said. The new router gives Novell LAN users access to these features.

The module costs $2,950, including a onetime software license fee.

Amnet
1881 Worcester Road
Framingham, Mass. 01701
(508) 879-6306

Webster Computer Corp. has introduced software that allows its Multiport Gateway router to act as a Digital Equipment Corp. Decnet router.

The Multiport Gateway is a router for Apple Computer, Inc. Macintosh systems. With the addition of the new software, it can function simultaneously as a Decnet Level 1 router and an Appletalk router with four active Localtalk networks.

The Decnet software is offered to current Multiport Gateway users free of charge. The Multiport Gateway is priced at $4,995.

Webster Computer
Suite J
2109 O'Toole Ave.
San Jose, Calif. 95131
(408) 954-8054

Server goes the extra mile

BY ELISABETH HORWITT
CW STAFF

SIMI VALLEY, Calif. — Micom Communications Corp. has announced what is said to be the first communications server to transmit data, voice, Group 3 fax and local-area network traffic over the same 9.6K bit/sec. leased-line connections.

The Marathon 1K Data/Voice Network Server incorporates a suite of voice, data compression and fax demodulation technologies to allow users to allocate the same leased line for all three types of traffic.

The product is said to support up to 40 asynchronous data channels and up to four channels of voice or fax traffic. The 1K's synchronous channel can handle LAN bridges, IBM Systems Network Architecture cluster controllers or CCITT X.25 packet-switched connections.

Marathon 1K $1,750 base price is comparable to that of a statistical multiplexer that typically only handles data. Voice/fax modules are priced at $1,400, and data expansion modules are priced at $1,150 and up. Shipment is scheduled for next month.

THE CEO VIEW

Still searching for the IS Holy Grail

Continental Bank CEO Thomas Theobald looks for fundamental, IS-induced improvement in his industry

BY MICHAEL FITZGERALD
CW STAFF

Thomas C. Theobald, Continental Bank Corp.'s chairman and chief executive officer, is a straightforward sort who works in shirtsleeves, his suit coat dumped in a chair next to his desk. Behind him is a terminal that spits a near-constant stream of information across the screen.

Since Theobald left Citicorp to head the Chicago-based bank in 1987, he has both brought it back to life and transformed it. Taking the shattered remnants of federal bailout recipient Continental Illinois, he reshaped the organization into one of the few major banks in the nation with no retail operations. Continental's $30 billion in assets come entirely from corporations and some extremely wealthy individuals.

Continental's corporate focus makes technology less important than it is in process-oriented retail banks, Theobald says. In the corporate banking world, personal relationships tend to count more heavily than excelling at information processing. And Continental is exploring a potential move to outsource some, or perhaps all, of its information systems function later this year [CW, Aug. 5].

Theobald does believe in technology, however. His struggle has been to create some sort of information technology abilities that work in the personal realm. He also says technology has wreaked havoc with profit margins in his industry without delivering a fundamental improvement in the way banks work. That technology-induced improvement is his Holy Grail, he says, and he still seeks it.

On technology's impact in the banking realm:
"We would have 10 times as many employees and half the quality of service if we didn't have the benefit of large computing, processing and communication facilities. But I've been struck that 10 or 15 years have gone by in which I keep hearing — to the point where I'm ready to throw up — about Sabre or American Hospital Supply, and nobody seems to come up with fantastic new business concepts . . . on a scale that's relevant to our kind of business.

"You could certainly say instant communication has had a significant and negative impact on a number of sources of bank profits. Until the personal computer and inexpensive terminals came along, there usually was some kind of premium you had by having some information. It's been the improvement in global telecommunications that's taken the profit margins out of most ordinary foreign exchange or security trading."

On whether technology's benefits have been oversold:
"I think it's been overbought. I won't blame the vendors. I mean, hell, when we go out to sell our services, we suggest you need a whole lot of them.

"We who purchase have overbought through basically our own ignorance and lack of practice, lack of involvement. Inevitably, there's room for people to solve problems that aren't all that critical, set and meet standards that aren't really the right standards and propose solutions that are less than useful. All of which has led to machinery or software purchases. I think it's obvious that there's a major hiatus in purchasing hardware these days, which to me is much more structural than business-cycle driven."

On IS awareness of business issues:
"It always fascinated me . . . that left to their own devices, technologists will solve internal problems. You'll have the world's best budgeting system, instead of a wonderful new portal to the customer. The budget system has an internal loop, and you can improve it, whereas customers are different, messy, not necessarily concerned about your priorities, and it's a whole lot harder.

"I can remember a couple of years ago when I was trying to find out the [priority list] for software development, [I noticed] one of the things we did real quick was a new system to order tickets for sporting events. Now, I'm sure it saved a nickel, but why the hell that should show up on the screen of things that are important to the future of Continental Bank, I don't know — except it's typical."

On putting personal information on computers:
"I think that's one of the ironies of the whole computer revolution. It has often been seen as some Orwellian catastrophe. But the fantastic thing is that you can produce a much more personalized service.

"What we're really trying to do is bring information technology into management of that relationship with the customer. It sounds silly, but maybe what we really ought to be doing is getting in the names of the assistant treasurer's kids and their birthdates, rather than some more data about how the deutsche mark is trading in Singapore."

On how he uses computers in his daily work:
"I have to confess I use this terminal principally for just information that goes by [Dow Jones News Retrieval]. Occasionally, I look something up. I don't produce my own documents or send messages to people. I do dictate E-mail to my secretary. "I had [a PC] at Citicorp and was totally qualified to use it, but in the real world, I don't think typing memos is the best usage of my time. [The PC] is also not a very effective way to get information.

"The senior management group [at Citicorp] was issued a PC and told to learn how to use the damn thing back in the early 1980s. But it didn't pan out as a primary medium of interaction. I don't think it has anywhere else, either — I mean, customers don't send me E-mail.

"I think there's something more than the backwardness of human nature there. I think [the computer] is a very thin medium of communication. We've been given five senses, and if you're not using them, you're missing something."

Michael Abramson

Continental Bank Corp. **The CEO:** *Thomas C. Theobald, 54, graduated with honors in economics from Holy Cross College and received his MBA, with a concentration in finance, from Harvard University.*

The career: *Moved up through the ranks at Citicorp, becoming vice chairman. Widely considered the heir apparent to former Citicorp Chairman Walter Wriston, Theobald left Citicorp in 1987 to take over the top job at Continental Bank and to bring it back from federal takeover to a publicly owned corporation.*

Accomplishments: *Repositioned Continental as a business-only bank by exiting traditional retail banking services. Led Continental back to profitability.*

INSIDE

▶ Few tasks are more important to IS executives than the management of expectations. Page 48.

▶ Calendar. Page 50.

COMMENTARY

Clinton Wilder

Just what do you expect?

I will remember Monday, Aug. 19, as a day of limitations.

The morning headlines delivered a powerful message that there were still very strong forces running against the tide of progressive thought and action in the Soviet Union. And when I arrived at the office under the overcast but calm skies over San Francisco Bay, I was reminded of the forces of nature.

With Hurricane Bob expected to slam into Eastern New England that day, *Computerworld*'s main office, in Massachusetts, had been evacuated, and all power had been turned off. There would be no access to files or electronic mail on the host computer and no voice mailboxes open. Half a world away, with all local systems untouched, I felt the loss of my accustomed electronic link to the East Coast.

INFORMATION TECHNOLOGY raises our expectations of what is possible. Most of the time, that is positive.

In a business world so absolutely dependent on technology, these things happen. The downside of global communications links is that worldwide operations can be disrupted by trouble anywhere along the network — especially if your E-mail to all locations has to be processed by a single CPU. Bond traders in Tokyo and London feel the effects of a Con Edison substation fire in lower Manhattan or an earthquake in California.

Information technology raises our expectations of what is possible. Most of the time, that is positive. In business, the most successful executives and firms in the next decade will be those that harness information most effectively and act accordingly. It goes without saying that information technology makes it happen.

But the game of expectations is a dicey one. In the presidential primary sweepstakes, the candidate who finishes second but "exceeds expectations" is a bigger winner than the winner who was expected to win anyway. Politicians now employ wonderfully titled "spin doctors" to manage expectations after the fact: "No, Ted, we never expected to *win* here, but the ground swell of grass roots support that we found exceeded all our expectations. We couldn't be happier with the results."

Wouldn't it be great if information systems departments could do this? "Oh, we never expected your application to work all the time. But we progressed so far beyond our hopes in the design that we're really pleased."

Come to think of it, maybe too many IS departments do say that. Which is precisely the point.

Expectations must be managed. One could argue that there are few tasks more important for the IS executive seeking business credibility.

But does that mean coaching business users to expect as little as possible from IS so that they will be pleasantly surprised when IS exceeds their hopes? Sure — if you want to run an archaic, negative, go-through-the-motions IS shop.

It is a fine line to walk. The IS executive should demand the best from his organization, technology and systems. In any firm that aspires to be world-class, should users demand any less from IS?

But systems, like people, are fallible. They can be disrupted by the vagaries of nature — not to mention the very real human-induced threat of viruses. Sometimes, they just don't work. But then, not all business decisions work out well either — and sometimes, world-class IS suffers as a result. Mutual Benefit Life, cited in this space about a month ago, has since seen its award-winning IS department slashed and its top IS leaders departed in the wake of the firm's financial catastrophe.

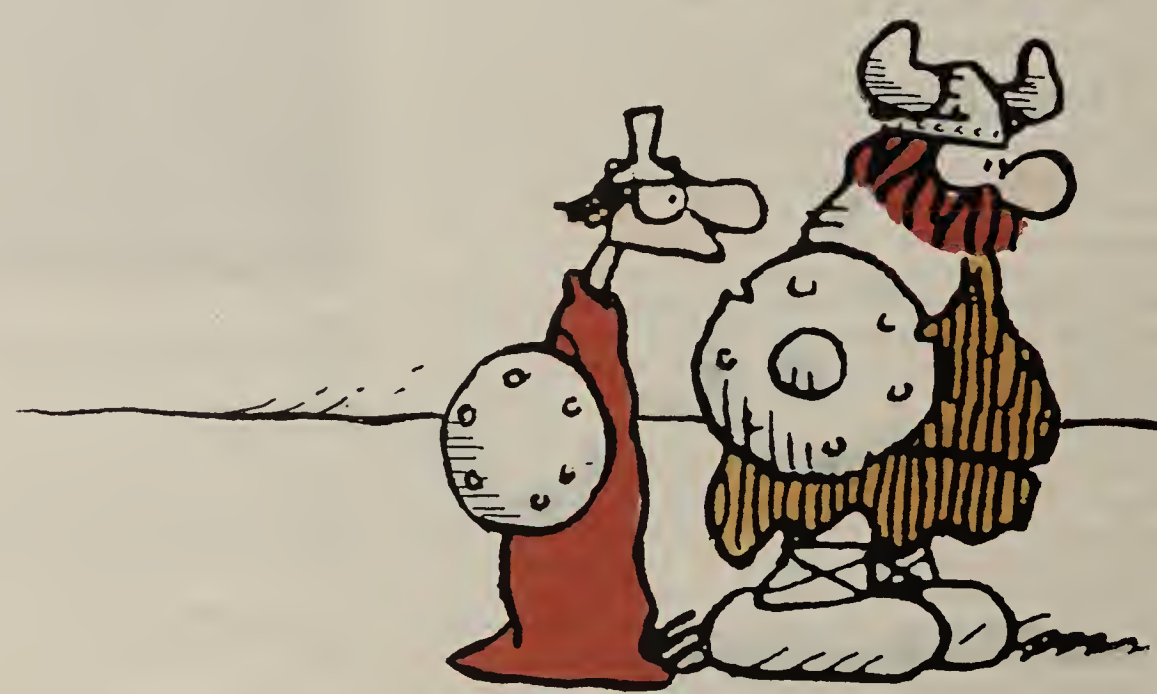
What is needed is a corporate culture with some tolerance for failure. The most innovative companies will tell you that their best product designers and market researchers understand that and are more likely to take calculated risks and propose creative solutions because of it.

Any baseball fan can relate to this: A .333 hitter can lead the league in batting, and he fails two out of three times. A few pitchers have reached the goal of perfection — for one game. One of them, Harvey Haddix of the 1950's Pittsburgh Pirates, pitched perhaps the best game in baseball history: 12 perfect innings. He lost the game, 1-0, in the 13th.

They say baseball is a game that humbles. Perhaps as the Information Age hurtles forward at an ever-increasing pace, IS executives and users would do well to take a small dose of humility. Our technologies will always have their limitations. We should never stop trying to improve them, but we should never forget their fallibility.

Wilder is *Computerworld*'s senior editor, management.

Don't settle for graphics



Read the writing on the wall. You don't want to compromise your image with graphics that don't paint the best picture. With IBM's new line of graphic adapters, you don't have to.

IBM has unveiled new levels of price/performance for fast 2D and 3D solids graphics applications. And the faster you can visualize data, the faster you can get your ideas across. Within the RISC System/6000™ family of POWERstations, you can get graphics performance that will really help you make your mark. For instance, the Gt4x graphics subsystem can draw 800,000 2D and 3D vectors and 80,000 Lighted Gouraud-shaded triangles per second, and gives you up to 16.7 million colors to work with to really showcase projects such as solids designs and scientific visualization.

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	Gt3	Gt4	Gt4x	GTO
2D Vectors/Second	650K	650K	800K	990K
3D Vectors/Second	NA	400K	800K	990K
Lighted 3D Gouraud-shaded triangles/Second	NA	20K	80K	120K

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MANAGEMENT SHORTS

Systematics outsourcing IS deal in the bank

The **Federal Home Loan Bank of San Francisco**, the largest of 12 regional home loan banks, is the first of those banks to outsource its information systems. The bank has signed a five-year deal with **Systematics, Inc.** in Little Rock, Ark., for management of its IS operations.

The contract is valued at more than $80 million. The bank hopes to reduce its IS costs by approximately 40% in the first year of the agreement.

In addition to taking over the bank's IS, Systematics purchased its check-processing operations, which currently process more than 150 million checks annually for 190 financial institutions. The bank will continue to provide transaction settlements and deposit availability services for its current check-processing customers.

The Federal Home Loan Bank of San Francisco provides funding for and is owned by 155 savings institutions and commercial banks located in California, Nevada and Arizona. The bank has $42 billion in assets.

Charles J. "Chuck" Gardner, director of information technology infrastructure at Eastman Kodak Co., has been named leader of the model business case working group of the **User Alliance for Open Systems.**

Gardner, as one of the original participants of the so-called Atlanta 17 and Houston 30 user coalition groups that grew into the User Alliance, is a longtime active member of the open systems movement.

The McLean, Va.-based user alliance also announced that its next plenary meeting will be held Nov. 20-21 in Reston, Va.

The event will include a panel of seven computer industry chief executives sharing their perspectives on open systems on Nov. 20.

B. Garland Cupp, executive vice president and chief information officer at American Express Travel Related Services Co., will be the keynote speaker at **Networld '91** in Dallas Oct. 15.

Cupp has worked in the IS area at American Express for 13 years and joined the Travel Related Services unit in his present position in 1985.

His keynote address is entitled "Network Management: An Integral Part of IS Management." He will discuss the challenges of managing complex systems and a global network that must serve critical business needs.

Networld '91 is sponsored by Bruno Blenheim, Inc. in Englewood Cliffs, N.J.

E. Wayne Renfroe, manager of factory IS at Caterpillar, Inc., has been named an associate director of the **Automotive Industry Action Group (AIAG)** in Southfield, Mich. He is the first Caterpillar employee to work as an executive-on-loan to the AIAG.

During his one-year appointment, Renfroe will coordinate the activities of the AIAG's computer-aided design and manufacturing project team, as well as teams devoted to finance and returnable containers issues. He will also act as Caterpillar's liaison to the AIAG. He is a 36-year veteran at Caterpillar.

Chief executive officers from two insurance companies will be featured on a panel at the **Life Office Management Association (LOMA) Technology Conference** to be held June 14-17, 1992, at the Drake Hotel in Chicago.

Howard Humphrey, chairman and CEO of Franklin Life Insurance Co. in Springfield, Ill., and Donald M. Peterson, president and CEO of Benefit Trust Life Insurance Co. in Lake Forest, Ill., will discuss executive support as a key to successful partnerships with IS. Another featured speaker will be James I. Cash Jr., professor at Harvard Business School. LOMA is based in Atlanta.

The 13th National Educational Computing Conference has issued a **call for papers** for its conference to be held June 15-17, 1992, in Dallas. The theme of the conference is "Windows to the World," referring to the increasing ability to view and interact with the world from the classroom, office or home through technology. The Texas Computer Education Association will also meet in conjunction with the conference.

Proposals for project sessions, activity sessions or preconference workshops are welcome. The deadline for submissions is Oct. 1. Detailed information is available from the University of North Texas Computer Education and Cognitive Systems Department, P.O. Box 5155, Denton, Texas 76203, (817) 565-3983.

Edward A. Kennedy, a former partner and division head at Andersen Consulting and a 30-year veteran there, has joined **Lante Corp.** in Chicago as general manager of consulting services.

Kennedy will assume responsibility for both the consulting and business development divisions of Lante. The company develops personal computer-based client/server systems for Fortune 500 clients.

that don't do you justice.

subsystem which produces almost a million 3D vectors and 120,000 Gouraud-shaded triangles per second, for fast, realistic shading effects.

And for those who need 2D graphics, for things like electrical design, there's the Gt3 that delivers 650,000 2D vectors per second in up to 256 striking colors. Best of all, GTO, Gt4 and Gt4x clearly lead the way on all APIs including X Windows Systems,™ GL,™ graPHIGS™ and Motif.™

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CALENDAR

The Society for Information Management's annual conference will be held Oct. 6-10 at the Chicago Marriott Downtown. The conference theme, "Managing and Leading IS: Focus on the Basics," explores the contributions that IS can make in quality improvement, organizational leadership, competitiveness, partnerships and customer service.

Speakers include Chief Executive Officers Paul Allaire of Xerox Corp., Robert Crandall of American Airlines and Ronald Gidwitz of Helene Curtis, Inc.

For information or to register, contact SIM in Chicago at (312) 644-6610.

SEPT. 15-21

International Electronics Packaging Society (IEPS) Conference. San Diego, Sept. 15-18 — Contact: William Ashman, IEPS, Wheaton, Ill. (708) 260-1044.

Data Administration Management Association International Symposium. Seattle, Sept. 16-17 — Contact: Bill Harenburg, Triadigm International, Los Angeles, Calif. (213) 622-0123.

Effective Methods for Information Systems Quality Assurance. Orlando, Fla., Sept. 16-18 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Federal Computer Conference. Washington, D.C., Sept. 17-19 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Auto-Tech '91. Detroit, Sept. 17-19 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

CASE Conference: Rebuilding for Software Automation with the 4 Rs of CASE. San Francisco, Sept. 17-19 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

Call Management for the Help Desk. Woodfield, Ill., Sept. 17-20 — Contact: Help Desk Institute, Colorado Springs, Colo. (719) 531-5138.

Strategic Planning for Information and Systems. Houston, Sept. 18-20 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Network and Distributed Systems Management '91. Washington, D.C., Sept. 18-20 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Working with Personal Computer Local-Area Networks. Milwaukee, Sept. 18-20 — Contact: John T. Snedeker, University of Wisconsin at Milwaukee, Milwaukee, Wis. (414) 227-3120.

Acucobol Developers Conference. San Diego, Sept. 19-21 — Contact: Acucobol, Inc., San Diego, Calif. (619) 689-7220.

Society of Telecommunications Consultants (STC) Annual Fall Conference. San Diego, Sept. 20-23 — Contact, Sharyl Bradley-Hennard, STC, Boca Raton, Fla. (407) 852-7071.

SEPT. 22-28

A Shared Solution in Software Technology (ASSIST) Conference. Montreux, Switzerland, Sept. 22-25 — Contact: ASSIST, Chicago, Ill. (312) 644-6610.

Information Technology and the Corporate Agenda: People, Productivity and Profit. Monterey, Calif., Sept. 22-25 — Contact: Lynda Rosenthal, CIO, Framingham, Mass. (508) 935-4631.

Softworld. Vancouver, British Columbia, Sept. 22-25 — Contact: The Computer Software and Services Industry Association, Arlington, Va. (703) 522-5055.

Advanced Network Computing Forum. Boca Raton, Fla., Sept. 23-24 — Contact: Megan Senete, New Science Associates, Inc., Southport, Conn. (203) 259-1661.

Posix Open Systems Frameworks and Profiles Seminar. Phoenix, Sept. 23-24 — Contact: Institute of Electrical and Electronics Engineers, Inc., Piscataway, N.J. (908) 562-3824.

Automated Operations Symposium. San Francisco, Sept. 23-24 — Contact: Peri Hoffman, Association for Computer Operations Management, Orange, Calif. (714) 997-7966.

Strategic Systems Development Seminar. Minneapolis, Sept. 23-24 — Contact: David Sturtevant, Information Engineering Systems Corp., Alexandria, Va. (703) 739-2242.

The Integrated Enterprise: Moving Beyond Technology. Orlando, Fla., Sept. 23-25 — Contact: Nancy Thomas, CAM-I Conference Services, Arlington, Texas (817) 860-1654.

Data Administration and Data Dictionaries. Washington, D.C., Sept 23-25 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Virtual Reality '91 Conference and Exhibition. San Francisco, Sept. 23-25 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

Association of Records Managers and Administrators (ARMA) 36th Annual Conference. Orlando, Fla., Sept. 23-26 — Contact: ARMA International, Prairie Village, Kan. (913) 341-3808.

Total Quality in Telecommunications. San Diego, Sept. 23-28 — Contact: Telecommunications Association, Covina, Calif. (818) 967-9411.

Showcase VI Conference. Advances in Applications Development. St. Louis, Sept. 24-25 — Contact: Washington University, St. Louis, Mo. (314) 889-5380.

Engineering Documentation Management Systems User Forum '91. Cincinnati, Sept. 24-26 — Contact: Carol McCalmont, Kalthoff Group, Cincinnati, Ohio (513) 871-7804.

Vitalink User Exchange Annual Meeting. San Francisco, Sept. 24-27 — Contact: Marilyn Callaghan, Vitalink Communications Corp., Fremont, Calif. (415) 794-1100.

Chicago Area Data Processing Management Association (DPMA) Joint Chapter Meeting. Arlington Heights, Ill., Sept. 25 — Contact: Jan LaHayne, DPMA, Chicago, Ill. (312) 222-8042.

Distribution/Computer Expo '91. Atlantic City, N.J., Sept. 25-26 — Contact: C. S. Report, Exton, Pa. (215) 827-7436.

Diskcon '91 Trade Show and Technical Conference. San Jose, Calif., Sept. 25-26 —Contact: International Disk Equipment and Materials Association, Sunnyvale, Calif. (408) 720-9352.

Operations Managers Conference. Laconia, N.H., Sept. 26-27 — Contact: Jerry Lemelin, Portsmouth, N.H. (207) 438-2815.

Excellence Through Total Quality Management. Washington, D.C., Sept. 26-27 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

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Software speeder-uppers

Are you choking on Cobol upkeep while users howl for new applications? Here are some field-proven tactics for keeping things moving

BY SUSAN NYKAMP
AND JOSEPH MAGLITTA

Ken Boster doesn't jump every time his users scream for something new. "It's not really important whether or not a user wants a screen that looks a little different," says Boster, information systems manager at Cooper Industries, Inc.'s Belden Division, which manufactures electronic and electrical wire and cables. "What is important is the overall needs of the business."

That kind of hard-nosed talk might strike many IS managers as devolutionary in these user-conscious days. But it speaks volumes about how serious IS managers have become about handling applications backlogs and runaway software maintenance. With backlogs at record levels, many IS managers are beginning to wonder if things will ever improve. (For the record, Boster says that his backlog is minimal and that his users are happy.)

Stalled systems development, of course, has been a fact of life since the early days of data processing. But the difference between 1961 and 1991 is that the problem is now reaching intolerable proportions. Tougher competition, shortened product life cycles, shrinking budgets and rising user demands mean big development and maintenance backlogs are increasingly unacceptable.

The seriousness of the problem was underscored earlier this month, when IBM announced it would expand AD/Cycle to provide tools to better maintain Cobol applications [CW, Aug. 19]. Overall, IS managers and consultants agree that work must be done more quickly today.

"The tendency to have systems take two to 2½ years to develop is long gone," says Hugh Nickel, director of systems services at Midas International Corp. in Chicago. "You've got to provide a business system for a user in three to six months in order to be effective."

A recent survey by Cambridge, Mass.-based consulting firm CSC Index, Inc. confirmed what most IS managers already know painfully well: IS is losing the backlog battle.

> IT'S GETTING HARDER to keep up with the demand for new systems development.

The study of 142 systems development directors in large U.S. firms found 60% being ripped asunder by the dual forces of keeping large numbers of aging Cobol applications running while trying to meet a variety of pressing user demands.

"There certainly is a sense that it is increasingly difficult to get new solutions out," agrees Hugh Ryan, director of new age systems at Chicago-based Andersen Consulting. "We used to see a ratio of 80/20, maintenance to new development. But today, it is more like 90/10."

Further worsening the situation are IS managers shackled by tightening development budgets and poorly trained staffs that often resist new development techniques. Given these pressures, it's

Continued on page 52

Nykamp is *Computerworld*'s associate editor, features.
Maglitta is a *Computerworld* senior editor, executive report/integration strategies.

Unstalling systems development

KEY POINTS

▶Development backlogs are at record levels as IS groups are forced to spend as much as 90% of their time maintaining old systems.

▶IS is exploring many avenues to jump-start stalled development, including refusing noncritical projects, improving training and buying more off-the-shelf software.

▶CASE and other development tools are used daily by only about one-third of companies.

▶Surprisingly, large U.S. companies say the recession has not seriously hampered development efforts (see story page 54).

▶Dr Pepper/Seven-Up Cos. use a small, three-member IS subgroup to track applications development. Meanwhile, Metropolitan Life Insurance Co. has embarked on a program that could boost software output by as much as 50% (see stories pages 53, 54).

▶QUOTABLE:

"There certainly is a sense that it is increasingly difficult to get new solutions out."

Hugh Ryan
Andersen Consulting

Rick Dieringer

Hall (left) and Boster *keep user requests under control at their Cooper Industries division by assigning an IS staff member to business units and saying no to noncritical projects*

Speeder-uppers

CONTINUED FROM PAGE 51

no surprise that "increasing developer productivity" was the top-ranked issue in the CSC Index study, jumping from No. 5 the previous year.

None of this is news to IS managers or to the ever-growing legion of computer-aided software engineering (CASE) and fourth-generation language (4GL) vendors, consultants, trainers and various experts who are making fortunes off of corporate desires to boost developer productivity.

Despite the billions of dollars spent on such products and services, productivity gains have thus far been scant, however.

It's important to note, too, that not everyone is suffering. Among the fortunate is John Reisteter, manager of applications development at Specialty Mineral Group of Pfizer, Inc. in Easton, Pa. He says his backlog is far smaller than that of most shops.

"We've just been lucky," Reisteter says. "Many of the people who built the systems originally are still here, so they don't spend a lot of time poring over the code looking for things. They know the systems well."

But what about shops that aren't so lucky? Is there any hope for them? IS managers and consultants give a qualified yes.

While the roots of the problem are many and vary widely from shop to shop, the following basic guidelines can help ease the pain. No miracles are promised, but the solutions are at least field-proven.

• **Learn to say no more often.** Probably the simplest way to cut down the backlog, consultants and IS advocates say, is to just say no to noncritical projects. Obviously, this isn't always possible, especially when the chief executive officer or a top vice president is pushing heavily on a project. But advocates say it works more often than you'd think.

According to Howard Rubin, chairman of Howard Rubin Associates, Inc. in Pound Ridge, N.Y., an inability to say no is the root of many development backlogs.

In a study of 500 companies across the U.S., Rubin discovered that fully half of all software maintenance projects are based on requests that have no business value.

As a result, he says, development groups get caught up in handling meaningless short-term requests at the expense of long-term projects.

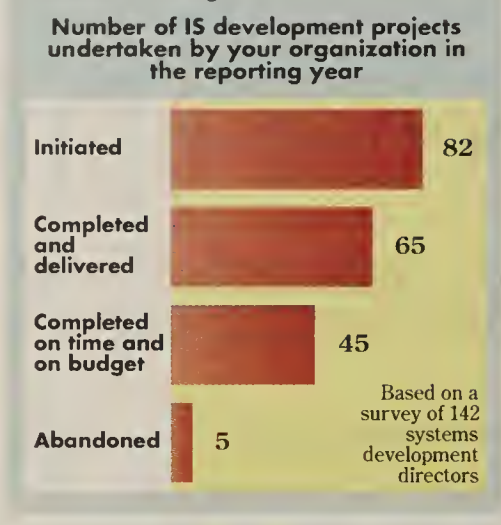
At Belden, 20-year veteran Boster has elevated saying no to a fine art. The division also has an IS staff contact person in each user area who handles and settles any disagreements that arise. His group works closely with marketing group liaison Dave Hall.

While minor changes can be made to systems after they are developed, Boster says, "Cosmetic changes are generally delayed and used as fill-in projects."

• **Get the right tools.** Despite all the attention it has received, CASE production systems are in use at only about one-quarter of the companies surveyed by CSC Index. Worse, daily use of other tools — such as reverse engineering (2%), simulation (1%) and object-oriented tools (4%) — is far lower. Even reusable modules, the most popular development tool, are used by only about 38% of companies, CSC Index says.

Not all bad news

Despite numerous pressures, nearly half of the development projects companies pursue are completed on time and on budget



Source: CSC Index, Inc. CW Chart: Michael Siggins

Midas' Nickel points out that one of the reasons CASE and other development tools are poorly accepted is that they are difficult to use across mixed hardware platforms. Another major drawback, others note, is the massive changes needed to make CASE work.

"If a company implements CASE tools right, it means that they need to change their methodology, they need to bring new skills in, and it means that existing developers need to change the way that they go about building systems," says Nicholas P. Vitalari, author of the CSC Index survey. "On a scale of 1 to 10, it's the 10 of cultural change for systems development." He adds that CASE has the best chance of succeeding if business processes are rethought.

Gallivan *hopes to save money on systems development by sharing data*

Yet such changes needn't be traumatic. At The Trane Co., a Tyler, Texas-based subsidiary of American Standard, Inc., the shock of introducing CASE last year was low, says John Dissly, application support manager at the company's Unitary Products Group.

The company had been involved in structured IS methodologies for years before IEF Version 4.0 from Texas Instruments, Inc. was brought in, he explains.

"There were a few users who felt they were losing some creativity in their coding and have since either left or been assigned to more technical responsibilities," Dissly says. "A lot of people realize that this is the way the IS staff will grow in the future."

Companies that have successfully implemented CASE are often enthusiastic about its benefits. Nickel says Midas has already developed three subsystems using AS/SET from System Software Associates, Inc. in Chicago on an IBM Application System/400 — all while programmers were still learning to use the tool.

"A person doesn't have to be fluent in the AS/400 control language or in RPG programming in order to use the tool," Nickel adds.

The largest application took six weeks to develop. "Under traditional coding, it would have taken 10 to 12 weeks," he says, noting that this amounts to a time savings of as much as 50%.

• **Buy systems instead of building them.** Buying ready-made systems to reduce backlog is increasingly popular. Blue Cross/Blue Shield of Kansas City, Mo., typifies this attitude.

In the past, explains Judy Bond, assistant vice president of IS, the company built systems because it feared no one would understand its business as well as the in-house programmers could.

"Now," she says, "we take advantage of software that is already built and tested. If we really need a new system, we'll go out and buy it."

A new study by Input in Mountain View, Calif., confirms that the health insurance provider will have plenty of company: The market research firm found that most respondents planned to spend far more on application software in 1991-92 than in previous years.

• **Improve quality.** Improving quality is a good way to begin the "unstalling" development efforts, says Larry Constantine, an independent consultant in Acton, Mass. Put in IS terms, that means rewarding programmers for thinking smart, says Constantine, the developer of structured design, which is the first formal development methodology.

For instance, at one company, programmers used to get feedback based on the number of lines of new code they generated.

By changing the monthly report on programmer productivity to include the total number of lines of code delivered, including all code taken from the reusable-component library, Constantine says, the productivity gains were immense. "In six months, reuse had risen by a little over 50%," he says.

• **Make better use of existing capabilities.** Making existing systems more efficient has become a top priority for Public Works Canada, a federal department based in Ottawa.

Jim Gallivan, assistant director of contracting, analysis and review, says the group is actively looking for opportunities to share data as a way to cut down on development expenses. "One way to attack the systems development backlog [is to] obviate the need for several systems," he explains.

To this end, IS workers are systematically cataloging data produced by different groups to identify which can be produced once and shared. "Instead of replacing or enhancing existing applications, we've said, 'Let's take a look at data to be shared by 10 applications, and maybe we'll let some applications die,' " Gallivan says.

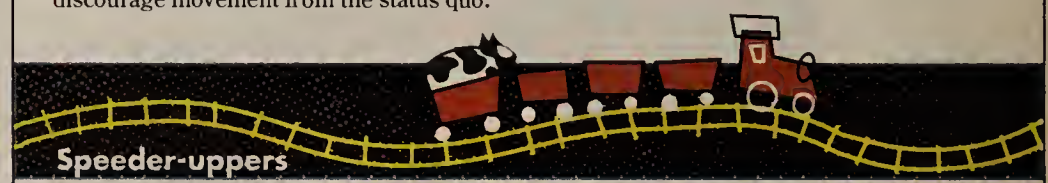
The group is also looking to give end users more direct access to summary data via Powerplay, a microcomputer-based executive information system from Cognos Corp.

• **Limit system size.** Another way to help nibble away at the development backlog is to have the staff limit the size of the systems they will build, CSC Index's Vitalari says.

"For example, they might specify that

Getting back on track

- **Time pressures.** The dangerous attitude here is: "Whatever you do, do it quick!"
- **Eroding knowledge base.** Understanding of the business and its systems is diminishing. Current systems have become organizational knowledge bases. In many cases, all of the business rules and regulations are known only to the system.
- **Poor track record.** Nonperforming or late systems lead to a pervading perception that any new development effort will take too long and will cost too much.
- **No strategic systems plan.** This leads to an organization tending to assume a reactive, rather than a proactive, systems posture that favors the status quo.
- **Short-term view.** This leads to decisions to reuse assets, such as programs and databases, which should really be replaced for long-term gains.
- **Technology infatuation.** This is often used to attack the symptoms while perpetuating the problem. This often manifests itself by placing a state-of-the-art technological wrapper around an essentially rotten core.
- **Poor project management.** Ineffective practices place new development efforts at risk and discourage movement from the status quo.



- **Establish strategic systems plans and tie them to the business.** Such plans permit an organization to break away from its current system architecture toward more synergistic structures. They help to avoid rewriting systems that should be redesigned.
- **Adopt a top-down systems planning, analysis and design methodology.** Information systems and databases cannot be effectively built from the bottom-up.
- **Provide needed education for planners, analysts and designers.** Through education, organizations can acquire the skills needed to produce quality systems using a minimum amount of resources.
- **Institute effective project management practices.** Establish a system life cycle methodology and clearly define the roles and responsibilities of its participants. Strong project management is a must for any successful development effort.
- **Apply sound economic analysis.** This is especially important when determining whether to invest in maintenance vs. new development. Systems, like any other business asset, can turn into a liability when not managed properly. Maintenance and operational costs are key factors in determining a system's overall cost effectiveness.
- **Commit to do it right.** An adequate commitment of time, people and dollars is critical. Without these kinds of commitments, none of the other remedial actions will help end the systems development backlog.

Source: B4 Group, Inc. CW Chart: Janell Genovese

if they can't deliver something to the customer within three to nine months, they have to reconceptualize."

When larger projects are necessary, they are broken down and delivered in manageable phases.

Andersen's Ryan agrees: "One of the problems we have in IS is that we have always felt that the first solution has to be the perfect solution. To improve our delivery, we should begin to look at projects in an evolutionary sense, dividing them up into cycles of nine to 12 months and delivering capabilities in phases."

• **Don't forget training.** Training people in the use of new technologies and management skills is another crucial component of better development productivity, IS managers and consultants agree. They note that a big investment in new technology is useless unless accompanied by a big investment in staff education.

At Midas, some 30 users of a new personal computer and 4GL-based sales reporting system received between two weeks and three months of training, Nickel says.

At Trane, a move from mainframe-based terminals to DB2, PCs running OS/2 and a Novell, Inc. local-area network prompted development staff members to rethink how their jobs were done, Dissly says. "It's taken some individuals about six months to go through the formal training, a pilot project, code generation and then go through one or two small applications that involved several transactions," he says.

Miles to go

Naturally, not all of these solutions to the problem of stalled applications development projects will work in every organization. Every company and every IS group has its own culture.

While these suggestions can help IS organizations to varying degrees, other larger stumbling blocks, such as a short-term orientation, extend far beyond IS. For example, Constantine, who does much of his consulting work abroad, echoes the oft-repeated observation that U.S. businesses must learn to look beyond short-term payoffs, especially in systems development.

He says IS managers in Europe, Australia and even the Soviet Union all do a much better job of taking the longer view of software development than do their U.S. counterparts. The big difference is that they see payoffs — not costs — as the big issue, he says.

Vendors of applications development tools also need to change radically, Constantine says. "For a decade or more, almost all software has been developed by groups of people," he notes. "Yet our tools and our methodologies — and the whole mystique of the profession — elevate the notion of the lone programmer."

Today, the IS groups pushing the envelope of software productivity, he says, are those using high-performance teamwork models, such as structured open teams, with tools to match. Many are pushing development efforts to workstations and end-user groups.

Until more companies adopt such modern approaches, experts agree, IS is doomed to remain tangled in the remnants of its software past and the tightening tentacles of the future.

Free-lance writers Mary Lou Roberts and Kathleen Gow contributed to this piece.

Just what Dr Pepper ordered

BY TONY BAER

To add extra fizz to its "cola wars" with industry giants Coca-Cola Co. and Pepsico, development specialists at Dr Pepper/Seven-Up Cos. decided to think small.

The Dallas-based soft drink maker uses a tiny, three-member information systems subgroup to help keep development on track for its seven market research groups, each of which handles a specific brand or product line.

The group began evolving five years ago after the merger of Dr Pepper and Seven-Up, according to Elizabeth LeCroy, marketing IS manager. The union led to a 1990 corporate directive to create "multicompany" information systems that would enable the seven-brand company to act as nimbly as a single-brand competitor. The group was charged with working closely with end users and taking a lead role in selection and use of computer-aided software engineering (CASE), fourth-generation languages and other rapid prototyping tools.

LeCroy says a catalyzing event occurred shortly after the merger, when a 10-year-old Digital Equipment Corp. VAX 6510-based marketing information system was brought in-house after being maintained by an outside provider. Efforts to update the system to produce more and better reports for marketing users proved that the subgroup approach could work, LeCroy says.

Last year, the group installed DEC's RDB on the VAX and acquired CASE tools from Cognos Corp. to generate applications and common user interfaces.

To keep software costs down, LeCroy's group bought a small VAX 3100 as the development platform, thereby allowing the group to purchase cheaper runtime licenses to bear the brunt of use.

After successfully completing one major marketing subsystem, the group has high hopes for the future, LeCroy says.

Baer is president of Business and Technology Communications in New York.

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Despite hard times, systems development clanks along

BY KATHLEEN GOW

As if the problem of keeping up with systems development wasn't bad enough in itself, along comes a recession. But — surprise — the groggy national economy hasn't necessarily been extra bad news for beleaguered systems developers.

Despite slimmed budgets, market researchers say, many U.S. companies are holding tight on software spending, including maintenance and development. Many are realizing that shortchanging development efforts in key areas is tantamount to turning off life-support systems.

"It's not a factor of the recession but of competitive position," explains an IS executive at a large insurance firm in New York. Ongoing systems development, he says, would continue whether or not the recession had come about.

Weathering the recession

According to a recent report by Input, a Mountain View, Calif., researcher, most U.S. companies were not blindsided by the current economic blahs. While most companies hadn't budgeted specifically for the recession, many had already planned tight budgets for a third straight year, according to Doug Tayler, vice president of research at Input.

While some IS groups have implemented hiring freezes, Tayler notes, most of the heaviest cutbacks have been in the use of outside services, such as development outsourcing. Overall, typical increases for software and services were below 5%, the Input study found.

Jeffrey Sherrin, director of IS at the Agricultural Products Division of ICI Americas, Inc., a chemical company in Wilmington, Del., says systems projects with a heavy customer focus are most likely to survive in tough times.

"For instance, we are now linking our customers' computers to our own," Sherrin explains. "That kind of work will always be top priority, recession or not."

Gow is a free-lance writer based in Medford, Mass.

What suffer during a recession, Sherrin and others say, are the secondary priorities, or what consultant Howard Rubin broadly calls "discretionary projects."

Rubin, chairman of Howard Rubin Associates, Inc., a Pound Ridge, N.Y., consultancy, says nonessentials such as systems enhancements and new decision support and analysis capabilities are far more likely to suffer from the current resource shortages.

However, holding off such work may be only a short-term fix: While these tasks have been removed from the "to do" list, Rubin says, the demand for many of them remains. Thus, removing them from development schedules hasn't so much eased backlogs as hidden pent-up demand.

Some hard-core optimists view the recession as a chance to revamp aging systems and stake a leadership position for when the economy recovers.

"If you can afford to, a recession gives you the opportunity to take a fresh cut at your systems; it's an incentive to become more effective," says Kenneth B. Gilman, executive vice president and chief financial officer at The Limited, Inc.

The Columbus, Ohio, retailer and catalog company says it has accelerated systems development to accommodate growth. Gilman explains: "If your business is growing rapidly and you don't want to add head count, you must do something."

Not all rosy

Not everyone has escaped the recession's bite, however.

Financial and insurance industries in particular have "scaled back dramatically" on systems development, says William J. Barry, president of The B4 Group, Inc., a Manchester, Conn., consulting and training firm. Many companies in these beleaguered industries are consumed by "massive maintenance" needed to shore up old systems, Barry says.

Some affected companies are slashing training and cutting projects with low payoffs or paybacks longer than two years.

Mark Shirman, president of Innovative Information Systems, Inc., a systems integrator based in Norwood, Mass., also notes that a growing number of New England companies are farming out less development work. In fact, many are bringing work back in-house to justify current IS staffing, he says.

Another, more subtle result of the recession, consultants say, is longer lead times needed for approval of development projects.

Increasingly, such approval also requires higher level sign-offs than in the past. Projects are also being broken down into smaller pieces.

Furthermore, consultants and users say, recession has forced more companies to use off-the-shelf software instead of developing systems in-house. This was confirmed by another Input survey in which respondents said they planned to significantly boost spending on prepackaged software.

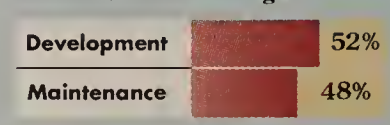
While focusing on strategic development work makes sense in a recession, Rubin cautions that cutting the wrong projects could be fatal.

"In trying to get to less," he says, companies "have to make sure that they are not getting rid of the best." •

Developers' dilemma

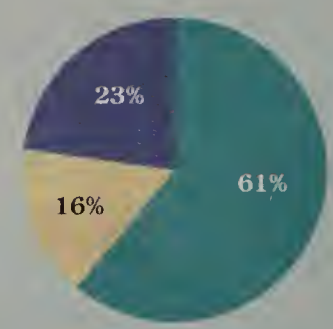
Most IS departments spend nearly as much time on maintenance as they do on development

Where the time goes



Survey base of 400 U.S. companies
Source: Howard Rubin Associates

How maintenance time is spent



Corrective Adaptive Perfective

Corrective: making program fixes & debugging
Adaptive: adapting to changes in hardware and software
Perfective: improvements for users, enhancing documentation

Survey base of 400 U.S. companies
Source: Howard Rubin Associates

"It is becoming increasingly difficult to balance the demands for new development with the need to successfully maintain existing systems"

Percent of respondents

Agree strongly	25%
Agree somewhat	45%
Neutral	17%
Disagree somewhat	12%
Disagree strongly	1%

Base: 142
Source: CSC Index

"Given the new competitive environment facing firms today, systems development must build systems faster, cheaper and of higher quality"

Percent of respondents

Agree strongly	77%
Agree somewhat	18%
Neutral	3%
Disagree somewhat	1%
Disagree strongly	1%

Base: 142
Source: CSC Index

CW Chart: Michael Siggins

Bottom line time at Met Life

Insurer aims to boost software output without adding staff

BY MAISIE MCADOO

When the cost cutting of the 1990s replaced the heady expansion of the 1980s, Metropolitan Life Insurance Co. knew the time had come to untangle itself from routine software maintenance and focus on revenue-boosting projects.

Developers at the $38 billion New York insurance giant have embarked on a new, three-pronged program that outside observers say could boost software output by as much as 50%.

The plan for boosting development speed and productivity hinges on building a standard, structured methodology, computer-aided software engineering (CASE) tools and improved data management, all without boosting head count, says Vince Pasqualicchio, Met Life's director of applications and data management.

McAdoo is a free-lance writer based in Brooklyn, N.Y.

"We're running on a tight budget," Pasqualicchio explains, "and we can't hire a lot of people." The company cannot cut back on information systems operations, so it has decided to eliminate inefficiencies, he adds.

Driving the effort is Met Life's Investment Systems & Technology (IS&T) Group, which was established in 1988 after rapid expansion during the 1980s. Some 275 workers today support 40 to 50 simultaneous data processing projects aimed at portfolio managers, asset managers and others.

Drawing up a game plan

To stay on track, Met Life's development group brought business analysts into the decision-making and established an internal performance monitoring group. The first step was to create a structured methodology for building systems, Pasqualicchio says. Besides being crucial for effective use of CASE tools, a methodology also helps ease software maintenance, he says.

Also needed was a good understanding of how to do planning, analysis and design.

"We're great at the back-end side of the life cycle at writing code," he says. "But getting requirements, doing efficient design and tying it into the corporate model has never really been done well in a lot of organizations."

In 1990, Met Life bought 50 copies of Knowledgeware, Inc.'s Application Development Workbench tools, which automate many functions and perform edit checks.

Before CASE could be put to work, IS&T needed to set up guidelines and procedures for its use.

To make sure IS efforts stay on track with business goals, a team of business analysts and development staff members meets regularly to ensure that effort goes into revenue-producing programs. Another group assesses productivity.

Training plays a key role in the campaign to boost developer productivity. Staffers in every department are getting trained by vendors and IS, according to Pasqualicchio.

For example, business analysts learn about analysis and design, while developers are trained in design, code generation, CASE and data management programs.

Big payoffs expected

While Pasqualicchio says it's too early to assess productivity improvements, he adds that he expects dramatic payoffs in the not-too-distant future.

"We've seen organizations gain 25% to 50% improvement in productivity just through improving business alignment," says Howard Rubin, chairman of Howard Rubin Associates, Inc., a consulting and research firm based in Pound Ridge, N.Y. "Adding CASE and a structured methodology should push the figure even higher."

For now, the biggest struggle is keeping communications open between IS&T and users.

According to Pasqualicchio, such dialogue is crucial because the program will pay off only as long as business and technology departments keep talking. •

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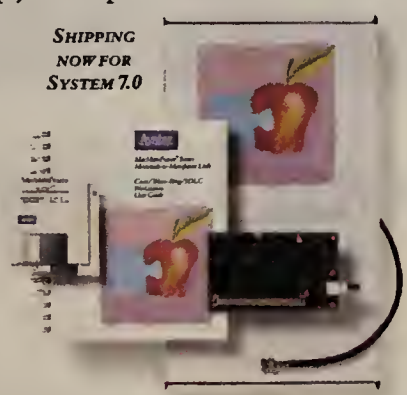

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Cheap, ample data entry draws U.S. firms overseas

Continued from page 1
says companies with a large volume of keying should be able to cut data entry costs 25% to 50% by going offshore.

As compelling as the economics are in places such as the Caribbean, Ireland, India and the Philippines, most U.S. companies that move data entry and similar activities offshore say they do it more out of frustration over chronic labor shortages, high turnover and the low worker morale that goes with what is usually considered a dead-end type of job.

"We got a good margin of savings," David Kirshenbaum, senior vice president at Cigna Corp., says about Cigna's transfer of some claims processing to Barbados. "But the main motivation was that it was hard to find data entry labor in the U.S." He says the turnover rate in the data entry operation that Cigna sent offshore had been 50% to 60% annually.

Alternate routes

To eliminate the headaches of operating directly in a foreign country, some companies prefer to work through service bureaus or through companies they set up. American now works through a sister organization called Data Management Services (DMS), which is a unit of AMR Information Services, Inc., a firm that — like American — is a subsidiary of AMR Corp.

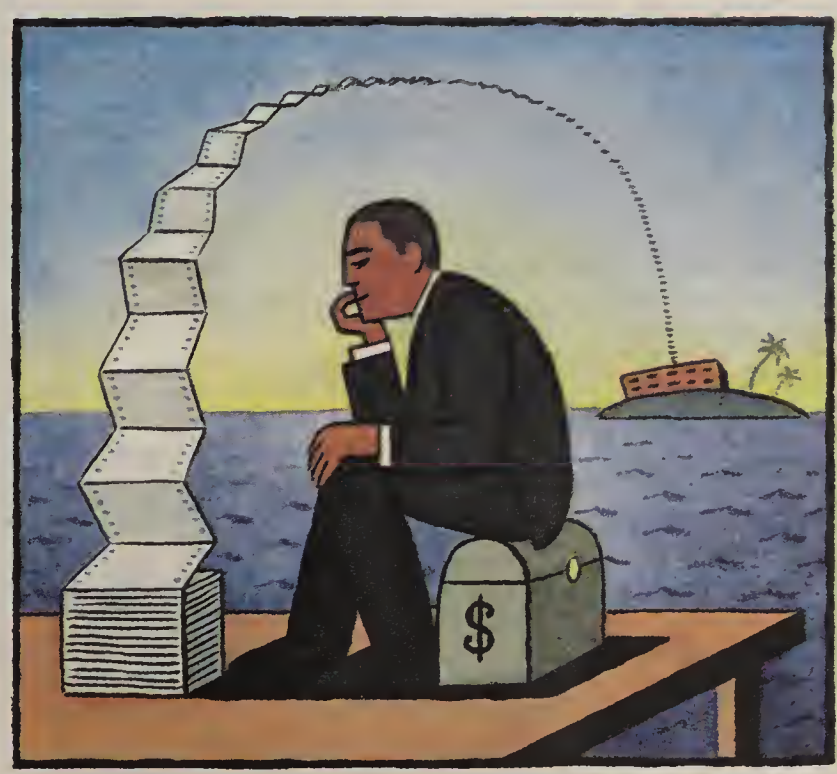
Dallas-based DMS is one of a half-dozen or so major firms sending all or much of their customers' data entry work offshore. DMS processes 60,000 medical insurance claims a day plus credit card applications, sales inventories and membership applications in its Barbados and Santo Domingo, Dominican Republic, centers (see box page 60).

"We combine the cost advantage of offshore production and the service advantage of an onshore provider," says Keith Woodcox, DMS' president.

Woodcox says DMS contracts for accuracy at 97% for keying only and 99% for keying and verification, but he says his internal standards are higher than that. He claims his customers, mostly Fortune 100 firms, have saved 10% to 60% in costs by transferring keying from in-house operations to DMS.

Service bureaus offer several options, with the predictable trade-offs between cost and turnaround time. Usually, they pick up source documents at an airport and fly them to facilities overseas for keying. The keyed data may be entered on tape, which is flown back to the same airport, or the data may be transmitted over satellite link or telephone line in batch mode for input into the client's computer.

Jamaica, for instance, has set up a "Digiport" in Montego Bay with a high-speed digital switch attached to a 50-ft satellite antenna. It touts the facility as a way for U.S. companies to reduce turnaround time and move voice and data back and forth at speeds up to 1.5M bit/sec., all at prices it says are well below traditional international rates.



James Steinberg

In some cases, overseas data entry personnel are on-line to client computers and applications in the U.S. They may do intelligent preprocessing of the forms, key data and correct errors flagged by the application.

Insurance companies have found that approach enticing and have recently set up claims-processing centers in Ireland, where the English-speaking population is well-educated and dedicated and the government provides a suite of attractive financial incentives.

Wages are kept low and employee loyalty strong by unemployment rates as high as 25% in some areas. The companies say they are saving 20% to 30% in claims-processing costs at their Ireland operations.

Cigna processes 4,000 group insurance claims a day at its facility in Loughrea, Ireland. Claims are flown daily from New York to Shannon International Airport and are driven to Loughrea. After manual review and approval, data is keyed interactively over two trans-Atlantic leased lines to Cigna's IBM mainframe center in Windsor, Conn.

Small but crucial part

The 115-person staff in Loughrea is a small part of the company's claims-processing work force, but Cigna views Ireland as "a labor hedge to sustain growth in a very labor-intensive business," says Craig Andrews, vice president of Northeast claims operations.

Massachusetts Mutual Life Insurance Co. set up one of its 10 claims processing centers in Tipperary, Ireland. James E. Miller, the insurance firm's executive vice president, says workers

Continued on page 60

Decisions, decisions

What's good and what's not about offshore data processing

Pluses	Minuses
+ Inexpensive labor.	- Fear of losing data.
+ Plentiful labor.	- Fear of loss of control.
+ Low staff turnover.	- Privacy/Security fears.
+ High staff loyalty.	- Cultural differences.
+ Educated workers (in some countries).	- Political/Economic instability.
+ English speaking (in some countries).	- Language barriers.
+ Allows use of idle computer resources.	- No telecom links/Not timely.
+ Government incentives.	- Foreign laws and regulations.
+ Quality programs.	- Lower quality than in U.S.
	- Productivity shortfalls.
	- Opposition from labor groups.
	- Cost of training, staff relocation.

Anthes is *Computerworld's* Washington, D.C., correspondent.

Continued from page 59
there are extremely quality-conscious — so much so that they occasionally need to be prodded to greater productivity.

He says the company is saving between 25% and 30% in processing costs in Ireland, not counting the savings from the near-zero staff turnover rate — a rate between 10% and 30% per year in the U.S.

Big corporate connections

The Ireland offices of U.S. insurance firms typically tie directly into big computer centers in the U.S., with Irish claims processors doing on-line data entry the same way as their U.S. counterparts. IS managers in the U.S. say that gives them a nice side benefit: Because this processing is done at an off-peak time in the U.S., computer time is essentially free.

New York Life Insurance Co.'s Clinton, N.J., data center used to sit mostly idle during the graveyard shift. Now, it springs to life at 3 a.m., processing U.S. insurance claims sent 3,000 miles across the Atlantic over a fiber-optic line from Castleisland, Ireland.

The company's Irish employees process 10% of the company's claims for 25% less than the cost in the U.S., according to Jim O'Brien, group vice president. They settle and enter data from 30,000 claims monthly.

Claims processing involves considerably more than keying in data, and the claims adjudication part of the job has led companies to the highly educated, English-speaking Irish work force, even though wages there are higher than in popular data entry spots such as the Philippines (see story page 62). "If more than 50% of the job is off-keyboard work, we're competitive," says John O'Brien, vice president of the Ireland Industrial Development Authority in New York.

Government grants

Companies wishing to set up operations in Ireland can expect some help from the Irish government in the form of rent subsidies, grants for training, capital grants for the purchase of equipment and per-head grants for each employee hired. In total, those grants average between $10,000 and $20,000 for every employee hired over the first three to five years.

Nevertheless, setting up an overseas operation can be difficult and costly. A major cost is training, which can be accomplished by bringing foreign nationals to the U.S. for an extended period of time or by temporarily relocating U.S. employees overseas.

Mass Mutual sent four Americans to Ireland for periods of two to three years, Miller says. The total cost for those employees, including transportation, is roughly twice the employment cost of the same people in the U.S., he says. "Expatriates are very expensive." •

How they stack up

A comparison of data entry personnel characteristics in three countries

U.S.	Philippines	Ireland
Average age of data entry personnel	**Average age of data entry personnel**	**Average age of data entry personnel**
16 to 24	20 to 35, including both data entry and software programmers	18 to 24
Average wage	**Average wage**	**Average wage**
$316 per week, full-time	$200 per month for data entry; $350 to $500 per month for software programmers	$10,000 per year starting; $11,500 to $12,000 per year with experience
Average education level	**Average education level**	**Average education level**
12.8 years (for data entry personnel, office clerks and bank tellers)	High school diploma	High school diploma
Unemployment rate	**Unemployment rate**	**Unemployment rate**
1990: 5.5% 1991: 6.8% (projected)	1990: 8.6%	1990: 14.5% 1991: 15.5% (projected)

Source: U.S. Department of Labor, Bureau of Labor Statistics, Office of Employment Projections; Bureau of Labor Statistics, Employment & Earnings; Embassy of the Philippines, Economics section; Ireland Industrial Development Authority

Caribbean scene

Data Management Services' offshore facilities:
Locations: Barbados and Santo Domingo, Dominican Republic.
Size of facilities: 120,000 sq ft total.
Number of computer operators and data entry staffers: 1,500.
Number of data entry workstations: 700 in two shifts.
Sample volumes: 1 billion keystrokes per month, 1.2 million medical insurance claims per month, 1.5 million airline tickets per day.
Modes of data delivery: By tape, satellite and direct interactive connection to customers' mainframes in the U.S.

Nancy Kowal

Some firms stay at home

While the idea of sending data out of the country for keying is growing in popularity, it is not yet as common as one might expect, given the potential benefits.

"The biggest impediment is fear of loss of control of data," says Janet Palmer, an associate professor at City University of New York's Lehman College. "The distances involved are intimidating."

American Airlines set out to find a better place in which to key the data from used passenger tickets and eventually decided to send all of its data entry to Barbados — but not without resistance. "People in payroll said, 'You can't send time cards down there; people won't get paid.' Everyone set out reasons why their stuff shouldn't go. But we discovered everything could go," says Stephen O'Sullivan, vice president and corporate controller.

Palmer, who has written extensively on the topic, says cultural differences, political and economic instability and foreign government laws and regulations can be intimidating factors and real impediments.

Sometimes, cost savings do not offset quality and productivity shortfalls. Lexington, Ky.-based Appalachian Computer Services, Inc. closed its keypunch center on the Caribbean island of St. Kitts after 18 months of operation when it was unable to get production rates above one-half the comparable U.S. level.

It did better at its Jamaican facility and held onto it longer, but it eventually sold that, too.

"The work ethic was not there," says Terry Webb, a sales representative at Appalachian.

Fast fax is fantastic for overseas

Offshore outsourcing of data entry has grown steadily and slowly, but new technology may be about to give it a big boost.

With most of the current approaches involving air shipment of source documents, jobs with turnaround requirements of fewer than 48 hours are tough to handle far from the user's facility. Now, some firms are beginning to use scanners and advanced fax techniques that enable fast, cost-efficient transmission of document images while leaving users in control of their documents.

Saztec International, Inc. in Kansas City, Mo., has data entry facilities in the U.S., the Philippines, Jamaica and Scotland, and it can now receive a customer's documents electronically at a rate of 700 to 900 pages per hour.

A customer premises device scans and faxes documents aided by software that strips off fixed information such as standard forms definitions. This information is added back at the receiving end, where data is keyed from a screen image.

"The significance of this technology is that it opens up offshore resources for quick-turnaround jobs," says Richard Thompson, Saztec's president.

Thompson says Saztec charges between $9 and $10 per hour for keying plus 4 cents to 5 cents per page for image capture and transmission overseas. He says companies with U.S. in-house operations spend $12 to $25 per hour for data entry, depending on location and how they do their accounting.

Mead Data Central, Inc. in Dayton, Ohio, is a major user of Saztec's fast fax service, sending images of legal records for keying for Mead's Lexis on-line service. Other Saztec customers, not all of which use the electronic method, include AT&T, World Bank, Nynex Corp., Hallmark Cards, Inc. and the U.S. General Services Administration.

A 1988 report by the U.S. Agency for International Development cited the fear of losing data as an impediment to offshore outsourcing, but it predicted that barrier would disappear with the development of better fax technology.

"In the next two years, you'll see an explosion of offshore data entry because of imaging technology," says Norman Bodek, president of the Data Entry Management Association.

The things that matter

Importance of factors influencing the decision to use offshore data entry services as seen by consulting firm SRI International

Factor	Importance rating
Quality of labor force: • Educational preparation • Productivity (speed/accuracy) • Dependability (turnover) • Creativity	 Low High Moderate Low
Low labor costs	High
Labor pool size	Moderate to high
Geographic proximity	Moderate to high
Logistics: • Airlines/flights • Ground transport	 High High
Telecommunications infrastructure	Moderate to high
English language capability	Low
Facilities cost	High
Government stability	Moderate to high
Government assistance/cooperation	Moderate
Tax incentives	High
Free trade zone status	High
Capital import/export restrictions	Moderate to high

CW Chart: Michael Siggins

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75. User: Other _____
95. Vendor: Other _____
(Please specify)

2. **TITLE/FUNCTION** (Circle one)
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21. Dir./Mgr MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
80. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management

OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Libranans, Students
90. Others _____
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3. **COMPUTER INVOLVEMENT** (Circle all that apply)
Types of equipment with which you are personally involved either as a user, vendor, or consultant
A. Mainframes/Superminis
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C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
F. No Computer Involvement

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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
75. User: Other _____
95. Vendor: Other _____
(Please specify)

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22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgmt; Dir./Mgr PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs., Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
60. Sys. Integrators/VARs/Consulting Mgt.
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management

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COMPUTERWORLD

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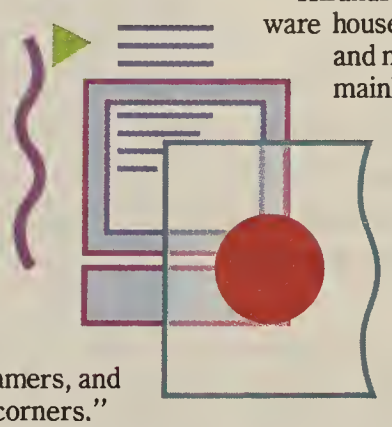
Japan's programmer crunch

Companies look to Asia for abundance of inexpensive labor

BY LORI VALIGRA

Half a million programmers shy of meeting its software development needs, Japan is moving offshore. The promise of plentiful labor and lower costs — as much as 80% lower than in Japan — has the Japanese looking to their Asian neighbors to fill the programming void.

Programmers are expected to continue to be scarce in Japan, helping to spur the move overseas. "The programmer shortage here will get worse," says Thomas M. Caldwell, managing director of consulting firm CFI Associates KK and president of the International Computer Association in Tokyo. "Companies are losing business opportunities due to the lack of programmers, and they are probably cutting corners."



Large computer makers are leading the drive, followed by independent software houses. Recently, some end users, including multinational companies, have begun to consider going outside of Japan for programming services.

The countries that Japanese businesses have targeted include China, with its abundant and cheap labor force that can readily handle Kanji ideographs; Malaysia, with its highly skilled programmers; Singapore, also with highly skilled programmers as well as government incentives; and India and the Philippines, with their still reasonably priced workers who possess strong English skills.

Leading the way

Japan's computer companies are setting up software enclaves throughout Asia. In 1985, NEC Corp., for example, set up NEC Singapore Software Development Center with 40 software engineers. The Singapore government enticed NEC with tax breaks and other incentives. "If we send staff to Japan for training, the Singapore government gives us some funding," says Akifumi Kambara, chief engineer at the Product Planning Division of NEC.

IBM Japan Ltd. also has software groups in China, India and Singapore. Nobuo Mii, vice president and general manager of Asia Pacific technical operations at IBM Japan, says that besides being less expensive, "the average programming capability in those countries is better than the average Japanese capability."

IBM China/Hong Kong recently set up a joint venture software development company with the Bank of East Asia and the University of Shenzhen in Southern China to develop programs for IBM and its clients on contract, according to a report in *Asian Business* magazine.

The magazine quoted an IBM manager saying that a project costing $120,000 to $130,000 in the U.S. or Japan would cost $50,000 in India and $35,000 in Shenzhen.

IBM has installed a digital telecom link between Shenzhen and Hong Kong offices for time-sensitive jobs.

With their intensive programming needs, it has been natural for Japanese software companies to take the offshore option. Infortech, Inc., a Tokyo-based software house with a total of 61 employees, was one of the earliest among its competitors to use offshore talents.

"The availability of qualified programmers [in Malaysia] was better than in Japan," says Infortech President Hideo Hirahara. The Malaysians are well-educated, with academic backgrounds in computer science from schools in the U.S., Canada and England.

Hirahara started an affiliated software house in Malaysia 10 years ago and now has similar operations in mainland China, Singapore and Thailand.

"The skills are about the same in the four countries, but mainland China has plenty of labor," he says. "According to the Chinese government, there are about 200,000 highly skilled programmers and systems engineers in China but local demand for only 10,000 of them. In Japan, there is a half-million programmer and system engineer shortage, so it's a good match."

Andersen Consulting poured resources into a 500-programmer offshore software operation in the Philippines six years ago. The center designs and develops business applications.

The Philippine center is hooked to Andersen's private virtual network so that it can tap computing resources worldwide.

About 20% of the work during the past six years has been for Japanese clients. About 50% to 80% in actual programmer costs can be saved by developing a program in the Philippines rather than in Japan, according to Joel Bauman, manager of Andersen Consulting in Manila.

However, those savings can easily dwindle to nothing if the project is not well-managed. Bauman recommends companies do projects offshore only if there are more than 1,000 days of work and if the project is not overly complex.

"Something that is very definable and for which the specifications are mapped out specifically is ideal" for sending offshore, says Michael Hemmert, vice president of International Systems Development (Japan) KK, a Tokyo consulting company specializing in bilingual database programs for international corporations.

The 18-month-old company, with a staff of only 15, is looking offshore to Singapore for talent because it can't hire enough programmers in Japan. That dearth has had an effect on its bottom line; the company has had to turn away clients.

End-user trepidation

While Japanese vendors and software companies are taking advantage of offshore resources, user companies have been slower to do so, hindered by a historically strong reliance on domestic software makers and fears of sacrificing the quality, confidentiality and timeliness of programs for their businesses.

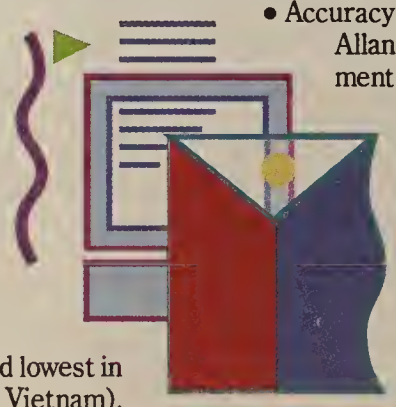
For some, however, the benefits may prove enticing. In the next two to three months, for example, oil company Mobil Sekiyu Kabushiki Kaisha in Tokyo will decide whether to produce some DB2 business software offshore, says Charles F. Cronheim, information systems director. "The availability of skilled labor is not a problem for us now, but it could be. And you can get skilled systems people in the Philippines or India at about 20% of the cost of those in Japan," Cronheim says.

Valigra is the Tokyo Bureau Chief for the IDG News Service.

U.S. companies find more than sun in Philippines: Plentiful data entry

BY JOEL TUBLES DIZON

The Philippines, well-known for Imelda Marcos' shoe collection, is also becoming well-known as a data entry hot spot. The $20 million data entry services market, with its 30 to 40 companies, caters mainly to overseas clients, including the U.S.



A variety of factors combine to make the country's data entry services attractive to U.S. businesses:

- Labor costs are the third lowest in Asia (behind China and Vietnam), with Filipino data entry clerks earning about 80 cents an hour.
- Data entry companies charge an average of $4 per 10,000 keystrokes, according to Philippine trade officials. Comparable work in the U.S. costs $65 — about 16 times as much.
- The skilled labor supply is both plentiful and stable. With an unemployment rate that is expected to balloon to 15% in 1991, there is a large labor pool, and workers tend to stay in jobs.
- The work force is better educated than Thailand's, China's and Vietnam's, according to Political & Economic Risk Consultancy Ltd., a Hong Kong research group.
- The nation is mostly English-speaking.
- Accuracy rate is 99.5%, according to Allan T. Reyes, trade development specialist at the Philippine Bureau of Export Trade Promotion. Companies typically institute keystroke verification and program validity checks. "Data encoding has evolved into a science," says Nilo S. Mapa, corporate planning officer at Saztec Philippines, Inc., one of the largest data entry operations in the country.

The Philippines' primary disadvantage is its low-technology communications exchange. Despite a recent buildup of telecommunications facilities, most data encoding firms still use air courier services to receive source documents. Saztec is one of the few companies to develop an electronic link to its customers for 24-hour turnaround (see story page 60).

Dizon writes for Computerworld Philippines.

No blarney: Irish labor costs less

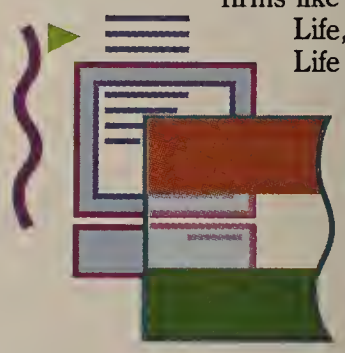
BY RON CONDON

Manufacturers learned the lesson long ago: Outsourcing manufacturing to companies in foreign countries can mean big money savings. Both systems manufacturers and software producers are making use of foreign talent for their programming and data entry needs.

One country getting their business is Ireland, whose amount of computing for overseas clients is growing by 25% a year. Ireland has approximately 6,500 programmers working in software companies, and it produces 1,000 computing graduates every year, says Barry Murphy, director of Ireland's Software Directorate. Key drawing cards for foreign firms include lower salaries than in the U.S. and the rest of Europe and a well-educated, English-speaking labor force.

Furthermore, people in a country whose unemployment rate is projected at 15.5% by the Ireland Industrial Development Authority (IIDA) are keen to get the work.

Already, a number of U.S. firms use Ireland for data entry services. "We have firms like Metropolitan Life, New York Life and Travelers Insurance here in Ireland," Murphy notes. In addition, vendor firms such as IBM, Digital Equipment Corp., Lotus Development Corp. and Microsoft Corp. are doing software development in Ireland.



"When they're asleep in the U.S., the people here can carry on with the work," Murphy says.

The low cost of labor plays a big part in bringing firms to Ireland. The average wage for a computer science graduate is about $10,000, according to the IIDA.

However, Murphy doesn't want foreign clients to equate cheap labor with a cheap product. To that end, he has undertaken a quality program among the country's software houses. He is planning to offer inexpensive training courses for company representatives in the evenings.

But the road has not been completely smooth for firms trying to attract foreign clients. "Some worry about getting blown up," thinking of the country in terms of Belfast in the North, says Mike Dunnion, founder of software firm MDC. Dunnion says he attempts to get skeptics to try the company out on a small job first. "Once we've established our credibility, the repeat business rolls in."

This image of an area under a constant state of seige is a hard one to shake for Northern Ireland. However, the Industrial Development Board for Northern Ireland claims that high-technology companies are pouring into the area, attracted by grants and a willing and well-educated work force.

The country produces some 500 to 600 computing graduates a year who earn about 30% less than their English peers.

Condon is a European correspondent for the IDG News Service.

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Help for the helpers

▶ With systems integrators targeting systems and services at almost any specialized group of users, isn't it time someone aimed niche-oriented offerings at systems integrators? **NEC Technologies, Inc.** thinks so. The Boxboro, Mass.-based U.S. subsidiary of **NEC Corp.** chartered a new organization earlier this month to develop and market product and service packages tailored for systems integrators. Senior Vice President Thomas Ruane said this leverages NEC's market presence to provide single-source, multiproduct packages for clients.

Chapter 11 for chip maker

▶ One of the latest Chapter 11 filings comes from San Jose, Calif., where **International CMOS Technology, Inc.** filed for protection from creditors in the U.S. Bankruptcy Court earlier this month. The company makes programmable integrated circuits.

Taking it to the street

▶ Summer's heat has done nothing to slow the rush of computer companies to Wall Street. Among the latest to file initial public offerings are **Zeos International Ltd.**, a maker of industry standards-based microcomputers, and **Artisoft, Inc.** Headquartered in Tucson, Ariz., Artisoft offers IBM Personal Computer-based local-area network products.

More briefs on page 66.

Fujitsu subtracts bodies, adds speed

BY LORI VALIGRA
IDG NEWS SERVICE

TOKYO — Rapid change may not yet be the hallmark of the conservative telecommunications industry, but it is the keystone of Fujitsu Ltd.'s highly automated Oyama factory, about an hour's "bullet train" ride from Tokyo.

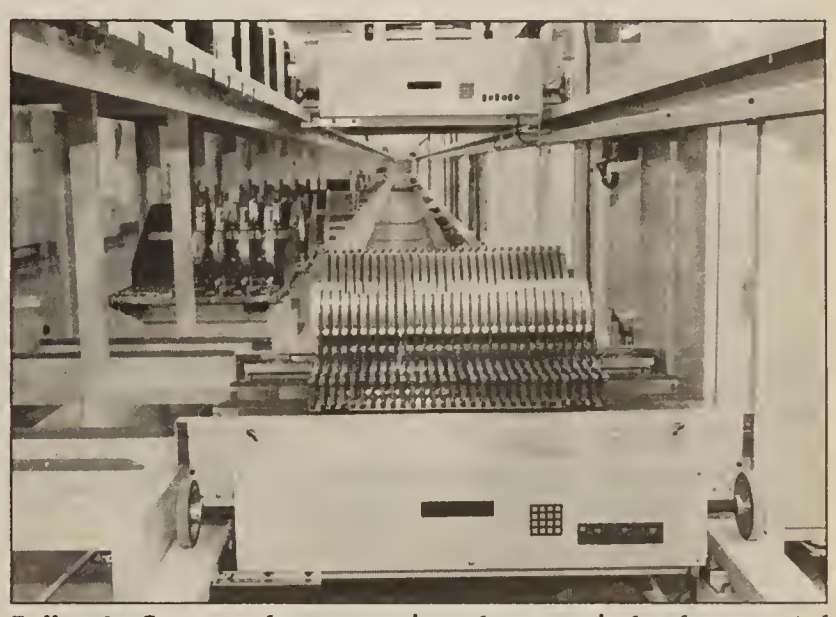
Amid the industrial hum of the plant, the denizens of this almost humanless factory — robots, automatic insertion machines and automatic guided vehicles — work to quickly turn around small batch orders of custom boards and other telecommunications products. Fujitsu aims to soon produce about 3,000 printed circuit boards daily in the 24-hour factory, which is automated straight from the warehouse through final testing.

Even on the test lines, where machines rapidly examine finished goods and display the results on a row of monitors, there is no one in sight: The machines automatically flag any defective parts.

The human touch

Humans tackle very high-precision hand assembly of optical devices and other more skilled jobs. There are 3,800 people employed at the 165,700-sq-meter plant to do design work, assist in the complex inventory and parts supply system and monitor robots and other machines. The workers are 37% fewer in number than the 5,200 employed at the plant in 1975. Automation is being used by many Japanese companies to compensate for a dwindling supply of skilled laborers, according a Japan Industrial Robotics Association study.

Though the Oyama plant was founded in 1959, the high degree of automation for telecommunications components assembly is only a recent feature of the plant, which makes 80% of Fujitsu's telecommunications equipment. Fujitsu claims it is one of the world's leading factories for making switching and transmission equipment.



Fujitsu's Oyama *factory consists almost entirely of automated machines, largely because of a lack of skilled Japanese laborers*

The company is now preparing the plant to produce next-generation optical transmission

Continued on page 66

Still healthy, HP creates consulting division

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. posted profits up 8% in its recently closed third quarter — not as strong a showing as analysts expected but still a healthy increase for an older-guard computer company.

To help sustain its profitability, the firm also announced the creation of a new open systems support division. Based in Mountain View, Calif., and announced earlier this month, the HP Professional Services Division will offer consulting services to users in need of help with issues such as multivendor networking and migration to open systems, said Ann Livermore, marketing manager for the new division.

Formally an addition to HP's maintenance and software technology divisions, Professional Services is basically an extension of the firm's current 4,600-person sales force. Beyond that, however, the branching out into the new division is more an indication of a new departure than an immediate revolutionary change.

HP's professional service business is growing between 20% and 30% per year, Livermore said. While HP said the new division is aimed at multivendor consulting, Livermore said, "Of course, the company hopes that parts of any new architecture will be HP products."

Orders for its new HP 9000 Series 700 workstations exceeded expectations for the third quarter. However, the company has a backlog due to insufficient supplies of its floating-point chip set earlier in the year. Also, revenue from its ubiquitous laser and ink-jet printers fell below third-quarter expectations. A company spokesman blamed the shortfall on a slowing demand for peripherals in the U.S., partly as a result of increased consolidations among customer firms.

HP posted quarterly revenue of $3.52 billion, up 9% from $3.24 billion in the third quarter last year. Profits were $192 million, up from $178 million last year — also, a 9% increase.

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SBA gives small firms big boost

Computer companies to benefit from qualification changes

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Some 300 small computer services firms could reap a $100 million annual windfall if a new proposal by the Small Business Administration (SBA) is implemented.

The SBA wants to substantially increase the revenue ceiling that determines which computer services firms are qualified to receive government-backed, low-interest loans and federal contract set-asides for small businesses.

Under current SBA rules, companies providing programming, packaged software, systems design, data processing, information retrieval and computer facilities management become too big to be "small" for purposes of qualifying for the relevant aid when revenue exceeds $7 million. The proposed regulation would raise the cap to $14.5 million.

It would similarly extend the qualification ceiling from $12.5 million to $14.5 million for firms engaged in computer rental, leasing, maintenance and repair.

The agency estimated that the new rules, on which it seeks public comment before Oct. 15, would add 336 companies to the pool of 33,000 U.S.-based firms now eligible to seek assistance through SBA programs. It estimated that those companies would see about $320 million in new small-business set-asides under the proposed rules. This translates into about $100 million in annual business over and above that which the firms, as a group, would have won without the rule changes.

"This is a big deal," said James Kerrigan, a vice president in the Washington office of Input. "For a number of companies, this represents an opportunity to keep growing while maintaining a competitive advantage."

Looking in the gift horse's mouth

Others were less impressed. San Francisco-based Data Processing & Accounting Services, Inc., which currently logs $6.5 million in annual sales, would be able to apply for SBA benefits for a longer period under the proposed rules. However, Chief Executive Officer Robert Tessler said, "My experience has been that the small-business designation is not significant for federal contracts."

More influential in securing government business, he said, is a firm's membership in the SBA's program for minority- and women-owned companies. That category does not include Tessler's firm.

The SBA based its proposed increases on several measures. It said that on average, computer services firms are four times larger than other service firms. Most of the non-computer services industry segments have annual revenue caps of $3.5 million for SBA program qualification, and the agency argued that the cutoff for computer services firms should be roughly four times that amount (see chart).

The SBA also said computer services firms face higher start-up costs than do other services firms. That suggests higher ceilings in order to help more companies overcome barriers to entry, it said.

The SBA is also seeking comments on an alternate proposal that would tie SBA program eligibility to a company's number of employees rather than annual receipts. On that basis, the SBA would set a cutoff at 150 employees, which it said is equivalent to $14.5 million in annual revenue based on an industry average of $97,000 in receipts per employee.

Pegging size to employee rolls rather than annual sales, the SBA said, would eliminate the distortion in apparent company size that results when a firm passes through equipment from manufacturers for the convenience of its customers.

Big deal for small firms

An SBA proposal to extend "small business" classification to larger firms would dramatically increase the number of computer firms eligible for government contracting set-asides

Small Business Administration proposals for small computer services firms

Business category	Annual revenue ceiling Current	Annual revenue ceiling Proposed	Average company size by revenue
Custom programming	$7.0M	$14.5M	$1.0M
Packaged software	$7.0M	$14.5M	$2.0M
Computer integrated systems design	$7.0M	$14.5M	$2.3M
Data processing and preparation	$7.0M	$14.5M	$2.5M
Information retrieval services	$7.0M	$14.5M	$2.5M
Computer facilities management	$7.0M	$14.5M	$2.4M
Computer rental and leasing	$12.5M	$14.5M	$2.3M
Computer maintenance and repair	$12.5M	$14.5M	$2.4M
Other computer services	$12.5M	$14.5M	$ .6M
All non-computer service industries	$3.5M	N/A	$ .5M

Source: U.S. Bureau of the Census

CW Chart: Janell Genovese

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THE STRAIGHT-PAPER-PATH,

Intergraph fined $5.31M by courts

Juries award damages to three small architectural firms, charging bait and switch tactics

BY J. A. SAVAGE
CW STAFF

TAMPA, Fla. — Charges of bait and switch tactics filed by three small architectural firms have resulted in the firms being paid an aggregate $5.31 million by Intergraph Corp.

The Huntsville, Ala., computer vendor paid the hefty sums because of misrepresentations it was said to have made with regard to its Innovator Systems line.

Early this month, Mudano Associates Architects, Inc. in Clearwater, Fla., received a $3.2 million court-awarded payment from Intergraph. The sum included $1 million in punitive damages.

Frank Mudano, president of the company, said he was "hooked" on the machine in 1984 when he saw a demonstration of three-dimensional graphics, and he wanted to be in the technology vanguard. But "the equipment didn't do what was demonstrated," he said.

In a second case, brought by John Stearman Professional Associates in St. Petersburg, Fla., a jury awarded the firm $1.3 million. That finding was affirmed last month, said Don Conwell, attorney for the plaintiffs in all three cases.

A jury awarded a third user $814,000. The cases were decided in Florida's 13th Judicial Circuit Court.

"The basis of the suits was bait and switch," Conwell said. "The PDPs simply didn't have the power for graphics. They either crashed or displayed imperfectly." He added that soon after his clients bought the systems, Intergraph stopped supporting them and offered no upgrades.

Intergraph was found to have pitched a "year-end closeout" sales line in November 1983, while in January, the company had already decided to stop marketing the machines and was clearing out its inventory. Mudano said he ended up buying Intergraph's "second-to-last machine," not knowing it was being discontinued.

"These matters are over," an Intergraph spokesman said. "We don't agree with the judgment and shall continue to stand behind our products and services."

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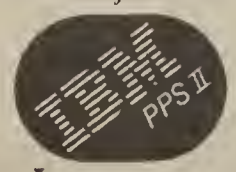

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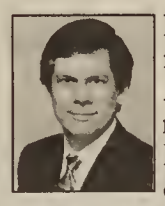
EXECUTIVE CORNER

BMDP names Ting president

William B. Ting has been appointed president and chief executive officer of **BMDP Statistical Software, Inc.**, a Los Angeles-based publisher of statistical software for mainframes and microcomputers. Ting, 43, comes to his new post from middle-market mergers and acquisitions firm **Geneva Cos.**, where he served as corporate vice president and chief information officer in charge of information systems and planning. His appointment to the head of BMDP is a key ingredient in the ongoing restructuring of the company, according to BMDP.

Jerre L. Stead, 48, chairman, president and CEO of Palatine, Ill.-based **Square D Co.**, has been named president of **AT&T**'s Business Communications Systems Division. The appointment is effective Sept. 1. Stead will replace **Jack Butler**, who will move to a new executive assignment at AT&T. AT&T Group Executive Robert Kavner cited the "competitive, customer-focused style of managing" demonstrated by Stead at Square D, a $1.7 billion global electronics products manufacturer, as particularly attractive to the telecommunications giant.



Dun & Bradstreet Information Services, North America recently announced the promotion of **Robert C. Meltzer** to executive vice president of IS management. Reporting to D&B Information Services President **Ron K. Glover**, Meltzer will be responsible for building an information environment that will better meet customer needs by personalizing and customizing D&B information, according to the company.

The board of directors of Portland, Ore.-based **Instantiations** earlier this month announced that **Michael W. Taylor** has been elected president and CEO of the firm. Taylor has been with the 4-year-old firm virtually since its start, most recently serving as vice president and chief operating officer. Instantiations provides a panoply of technology training and services in the growing field of object-oriented software.

INTERNATIONAL
BRIEFS

Success within its palms

▶ Riding on the success of its notebook design project, the **Hong Kong Productivity Council** is drawing up plans to work with several local manufacturers to design a palmtop computer, according to a recent report in the Hong Kong business press. The Productivity Council intends to provide a preliminary proposal to its "strategic clients" early next month to solicit their comments and recommendations. A formal proposal is scheduled for October release.

Deutsche marks to spend

▶ The trend toward downsizing is freeing up a lot of investment capital in Germany. According to a survey conducted by UK-based **California Software Products International Ltd.**, IBM's German midrange customers alone are prepared to spend some $299 million on downsizing.

Eastward ho

▶ **Ross Systems, Inc.**, software purveyor to the **Digital Equipment Corp.** platform, made its first acquisition in the UK earlier this month [CW, Aug. 12]. Now, Ross is spreading its reach to the Mideast. The software firm has signed a multiyear agreement making DEC distributor **Computer Network Systems** its exclusive distributor in the **United Arab Emirates**, where Computer Network Systems will provide Arab-language versions of Ross' financial, human resources and distribution packages.

Talk is cheap . . .

▶ . . . or at least less expensive for **British Telecom** users. As part of its flexible pricing strategy, the UK phone company plans to cut international charges and give discounts to customers whose call charges exceed $163 per quarter per line, said a report that appeared last week in the French business press. Options for the heaviest users will reportedly include discounts of up to 13.3% on all dialed calls. International charges are coming down about 10%, with some being cut by as much as 20%.

Compaq opts out

▶ Along with common specifications for developing IBM-compatible personal computers based on the DOS 5.0/V operating system, Japan's **Open Architecture Development Group** recently announced seven new group members. However, **Compaq Computer Corp.**, which recently established an arm in Japan, was conspicuous in its absence from the list. **Masaru Murai**, the former IBM Japan executive who is now president of Compaq's Japanese operations, was quoted in the Japanese business press as saying, "At this time, we see no merits to becoming a member of the group."

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Fujitsu

CONTINUED FROM PAGE 63

equipment and broadband Integrated Services Digital Network systems in anticipation of strong demand for those products. Fujitsu is one of the top suppliers to Nippon Telegraph and Telephone Corp., which is among the top purchasers of telecommunications equipment in the world.

Computer-integrated manufacturing (CIM) technology was already firmly implanted in the factory in 1986, when Fujitsu won a Japanese award for excellence in advanced CIM technology. A company called Fujitsu Cadtec Ltd., established within the factory earlier this year, is responsible for developing CIM systems and software for telecommunications equipment.

> RAPID SMALL-LOT production is a new focus of many Japanese manufacturers.

Rapid small-lot production — in Fujitsu's case of about 30 to 50 boards per batch — is a new focus of many Japanese manufacturers, and it is a technology that analysts here expect will take Japan to the next plateau in factory automation leadership worldwide.

Traditionally, changing parts, materials and equipment each time a new product is manufactured has cost firms time and money.

"In the past, 40% to 50% of the time spent in the factory was for device setup," said Steve Miller, director of manufacturing at Fujitsu America's Dallas factory. Machines had to be stopped and reset. In some cases, depending on product orders, some factory machinery was left idle — an inefficient use of resources.

No more, however, Miller said: "Now that is automatic." Miller, a former professor at Carnegie Mellon University, has already spent 19 months at Oyama studying Japanese manufacturing techniques so that he can transplant them to the factory in Richardson, Texas, near Dallas.

Fujitsu used various automatic insertion and soldering machines to reduce device setup time. For example, one type of machine has seven pallets that can each hold 30 reels of different parts. This means that 210 types of components can be rotated in and out of the machine to insert custom printed circuit boards.

Miller explained that the entire factory is computerized so that a mainframe gives other computers instructions on what must be built in a given day. These instructions tell a computer-controlled robot what parts to pick from inventory and send to which production line. Each line, whose functions are tied together using a homegrown fiber-optic local-area network, is also automated so that each board is fitted with the proper components and then tested.

The inventory matching line is one area of the factory where humans are needed. A row of workers matches parts to bar-coded containers, which are then conveyed to automated lines by automated guided vehicles playing music to keep humans out of their way.

The inventory control system, which includes a scheduler, joins with automatic parts delivery machinery to reduce product turnaround time from three days to about half a day, said Minoru Tamada, general manager of the Oyama plant. There are about 17 machines involved in production and materials control and handling.

The warehouse, in which tens of thousands of parts are stored, draws on the complex automation and human overseers. "The parts varieties are a major management and control issue for everyone in the industry," Miller said. "So the point is to manage small job lots in a large-scale factory." Fujitsu-written software for the computerized system plays a key role in ensuring that each part is where it should be, he added.

Flexible manufacturing is not new in Japan. "But the question is, why did it take so long to put this to work in electronics manufacturing?" Miller asked.

The answer lies in the complexity of control management of electronics, he explained. "We have an output of 3,000 devices a day pulled from about 1,000 different board designs and 1,000 different device varieties in our warehouse."

He said what is new in Fujitsu's approach is integrating the parts that feed into the assembly process.

NATIONAL
BRIEFS

Good buy, Columbus

▶ **Goal Systems International, Inc.** last week took another step along its well-carved growth-by-acquisition path. The Columbus, Ohio-based software company paid approximately $650,000 in cash for virtually all the assets of White Plains, N.J.-based **Training America, Inc.** Gaining Training America's key package, the Explain on-line Help and reference system, advances Goal in the computer-based training, documentation and employee support systems areas.

Two wrongs make a fight

▶ Last fall, a federal judge ruled that Broomall, Pa.-based **Allen-Myland, Inc.** (AMI) pirated **IBM** microcode when it reconfigured an IBM 3090 without a software license. AMI, busy battling the case on antitrust grounds, contested the ruling: It claims that IBM's licensing policies add up to a violation of the 1956 consent decree that governs how the giant conducts it business. Earlier this month, the judge reaffirmed his September ruling and reinstated AMI's obligation to pay IBM several million dollars in back license fees. AMI has indicated that it will appeal. Stay tuned.

Tandem takes an interest

▶ After a mutually rewarding 10-year relationship, fault-tolerant systems vendor **Tandem Computers, Inc.** takes an interest in newspaper publishing systems design firm **System Integrators, Inc.** — literally. The already strong bond between Cupertino, Calif.-based Tandem and its Sacramento, Calif.-based OEM was sealed with stock earlier this month, when Tandem took an equity position in System Integrators and placed a director — Tandem senior executive **Robert C. Marshall** — on its board.

How to work with recruiters

Avoid those who are vague and are fishing for proprietary information

BY ALICE LAPLANTE
SPECIAL TO CW

Most information systems professionals are accustomed to receiving unsolicited telephone calls from recruiters offering them an opportunity to move to greener pastures.

Although such calls can be a headache for busy professionals, many IS managers have found ways to turn recruiters' inquiries into a positive opportunity. For example, some IS managers turn to such callers when they are having difficulty filling a particular technical position.

Because most professionals have worked with a recruiter at some point in their careers to aid their job searches, they are often willing to listen when a recruiter calls with offers of interviews for technically interesting and well-paid positions.

However, it can be difficult to separate reputable recruiters who have a sincere interest in placing the right person in the right job from those calling with less solid opportunities. Some recruiters embark on telephone "fishing expeditions," without having any legitimate positions to fill. They use these contacts to collect proprietary information about a company or IS department that can help them cultivate more clients.

Here are a few ways to identify the more professional IS recruiters:

- They should possess an in-depth understanding of a position's technical requirements and not just a passing familiarity with buzzwords and acronyms.
- They should have a pleasant and professional manner and readily take "no" for an answer.
- They should be able to describe a specific position at a specific company and should provide detailed salary and benefits information.
- They should exhibit a willingness to answer questions about professional experience, clientele and method of referral.
- They should be more interested in developing a "long-term" working relationship than in providing only quick placement into what may be an inappropriate position.

"If the recruiters have worked in data processing themselves, that is usually a good sign," says Jeffrey E. Mahoney, data processing and general accounting manager at SCM Office Supplies Group in Marion, Ind. Mahoney says he always asks recruiters how long they've been in the recruiting business and who their corporate clients are as well as asking for a brief description of their professional background.

He also prefers to deal with companies that have retainers with a stable client base rather than those that make random cold calls or send mass mailings to potential clients. But, like many other IS professionals, Mahoney will take the time to talk to any recruiter who sounds reasonable.

In addition, IS workers say an advantage to working with recruiters is that they often have access to job openings — especially for management-level IS positions — that are not placed in newspapers or trade journals. Moreover, listening to a recruiter can provide valuable data on current salaries and technical requirements in the job market.

But many IS professionals get irritated with the volume of recruiter calls and try to get rid of such intrusions as quickly as possible.

According to Jim Durham, computer services supervisor at Virco Manufacturing Corp. in Conway, Ariz., a lot of cold calls are made to his company by recruiters who ask to be connected with anyone in IS. "We don't want recruiters randomly talking to departmental employees, so I have instructed the operator to send all such calls to me," he says.

Another grievance that IS workers have with recruiters is that they can be overly aggressive.

"A lot of times, these people aren't polite. And if they aren't congenial, I won't tell them anything," says Guy Pattison, director of data center operations at Kansas City Southern Railway Co. in Kansas City, Mo.

"Some of them can get hold of you like a bulldog, so I seldom give out names of colleagues," agrees Jay Dahl, data processing manager at Hatch Grinding Co. in Denver.

But, he adds, he is not averse to listening to a recruiter. If someone calls who sounds legitimate, Dahl will ask for a business card and keep it on file.

A key to knowing whether recruiters are on the level is to find out how candid they are willing to be. One of the chief complaints about recruiters is that they request IS workers to provide extensive personal information but are reluctant to give any in return. IS employees say they are especially suspicious of recruiters who will not divulge how they got the employee's name and number — and most say they refuse to talk to such callers.

LaPlante is a free-lance writer based in Palo Alto, Calif.

The other side

A certain amount of caginess on the part of recruiters is just the nature of the business, says recruiter Harvey Landsman, president of Landsman Associates in Sunnyvale, Calif.

For example, because recruiters are paid on commission, they often don't give out the name of the hiring firm. Still, in order to establish trust with a possible job candidate, Landsman will give out such information if asked.

One major obstacle recruiters face is that certain members of their profession have given the entire trade a bad name.

Landsman says, "Recruiters can use quite a few ruses to get hold of employee names and organizational charts."

Landsman also says that too many technical recruiters deal only with corporate human resources departments and have an inadequate understanding of the technical requirements of the positions.

ALICE LAPLANTE

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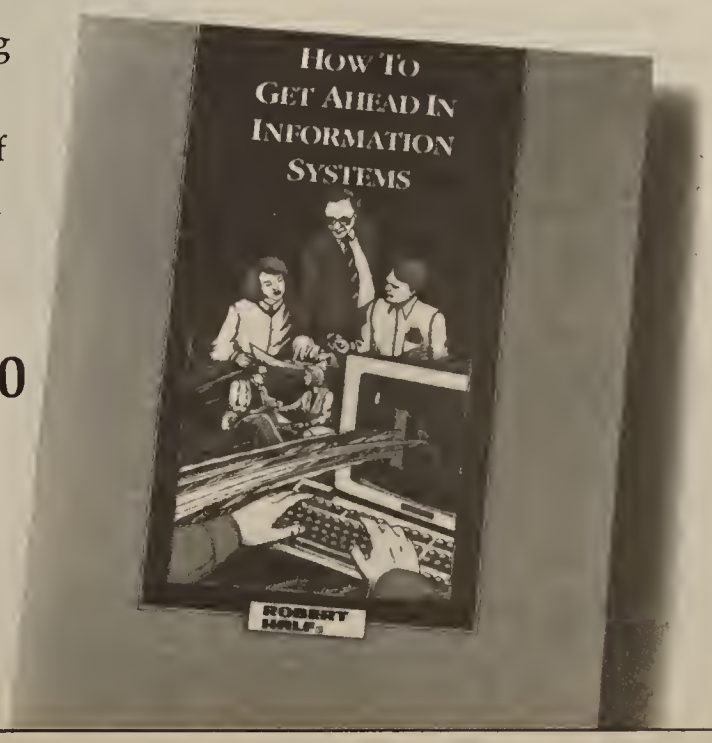

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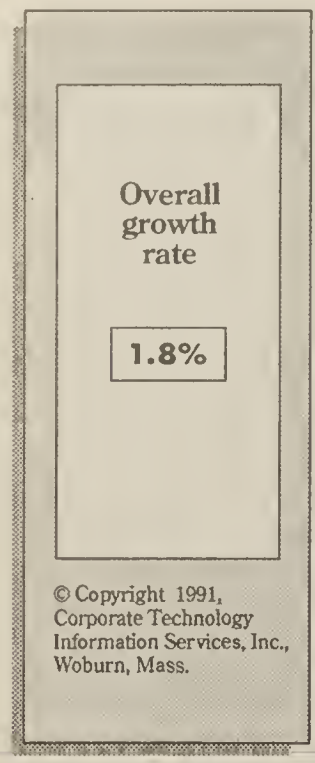

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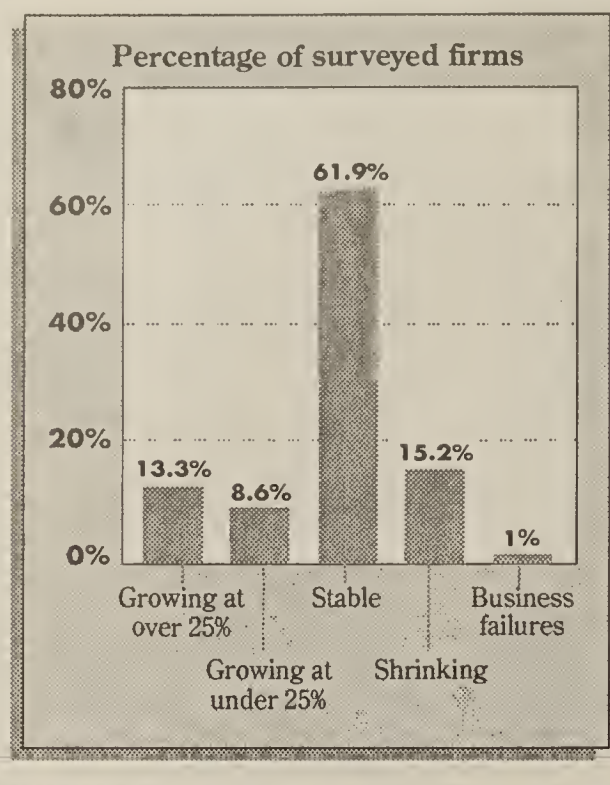

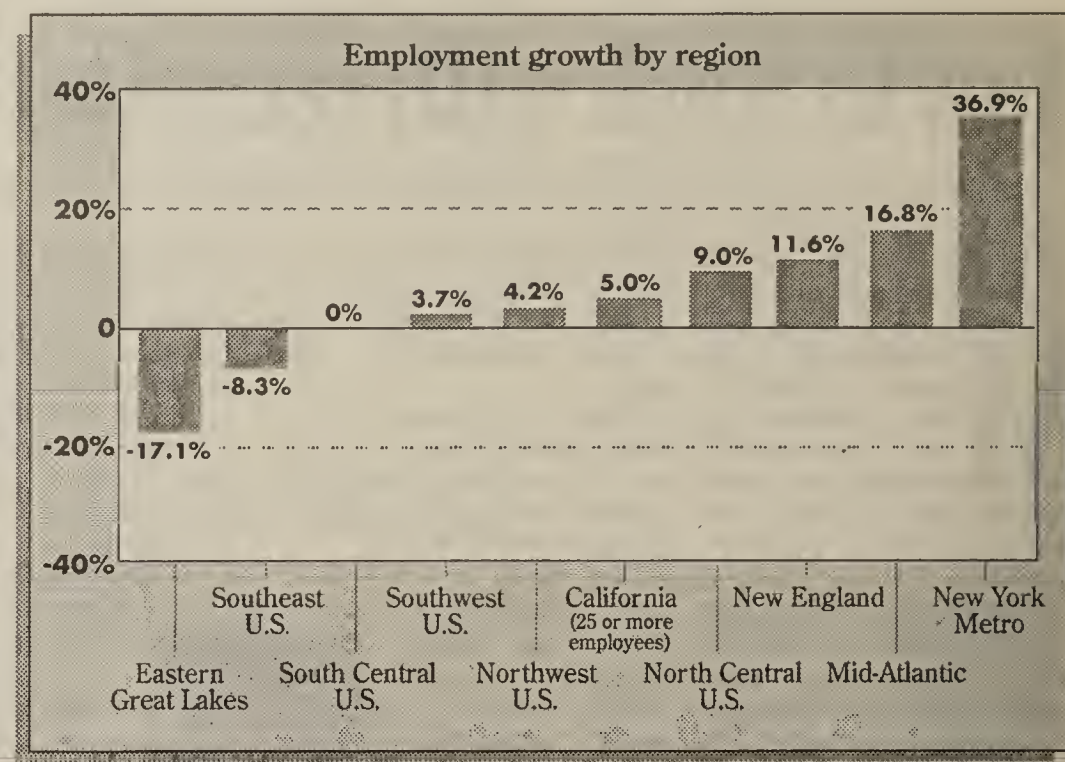

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TECHNICAL STAFF-COMPUTER SCIENCE - Ph.D. in Computer Science. Three years experience in the job offered or three years experience as a Research Associate or Computer Scientist. Experience should include parallel processing using logic programming, language design and implementation. Perform basic research in advanced scientific computing. Specifically, develop methods, algorithms, and tools for the solution of scientific and engineering problems on parallel computers. Will have a major responsibility for the DOE CHAMMP initiative in global climate studies. Salary: $3620/mo. - 40 hours per week/8:30am-5:00pm. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: D. Rule, Reference #V-IL 2992-R. No calls. Must have proof of legal authority to work permanently in the U.S. AN EMPLOYER PAID AD.

Business Systems Analyst, 40 hrs/wk., 5 hrs/wk O.T. 9:00am - 5:00pm, $25.80/hr., $38.70/hr O.T. Analyze business customer requirements to design, develop, implement and test customized complex information systems. Applications include: Networking including network load analysis; Database management. Tools: C, MS-DOS, UNIX, dBase III, micro and mainframe computers. M.S. in Computer Science as well as 6 months experience as a Business Systems Analyst or as a Research Assistant required. Previous experience must include: C; automatic data collection and importing into dBase III. Graduate coursework must include: Principles of Computer Networks; one project in network load analysis. Must have proof of legal authority to work permanently in the U.S. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Mary Millea, Reference #V-IL 2879-M, NO CALLS, AN EMPLOYER PAID AD.

Systems Analyst, 40 hrs/wk. 9:00am - 5:00pm, $34,000/yr. Design, development, testing and implementation of software for financial risk applications. Design and implementation of test procedures for real-time software. Tools: OS/2; MS-DOS; C. M.S. in Computer Science as well as 1 year experience as a Systems Analyst or as a Test Engineer required. Previous experience must include the development of real-time systems. Graduate education must include one project each in: concurrent programming; database programming in C. Must have proof of legal authority to work permanently in the U.S. Send resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Mary Millea, Reference #V-IL 3316-M, NO CALLS, AN EMPLOYER PAID AD.

Making contacts crucial for job search

Fast Track is a twice-monthly column dedicated to answering questions on career directions.

BY CHICK BISBERG
SPECIAL TO CW

Q I have a degree in health science and sports medicine but have also taken programming courses in Cobol, assembler, CICS and C. How can I combine my medical interest with computers?

S.O.
Oakland, Calif.

A Whether your interests are in systems consulting, product development in a vendor firm or building applications in a user environment, you'll find many uses for your programming skills in your industry.

The best ways to identify potential employers are to do the following:

- Network with members of the medical community who may have contacts at software vendors and see if they can arrange exploratory interviews.
- Contact clinical, laboratory and administrative IS areas at health care providers and see what possibilities you can develop.
- Check current publications focusing on the application of systems technologies in the medical/health arena.

Q I've looked through numerous books on resume writing for the optimum information systems format but haven't been satisfied. Should IS professionals follow a special design?

M.R.
Long Beach, Calif.

A I've never seen a design that fully satisfies me, either, but here are some rules of thumb from somebody who spends lots of time reading resumes:

- Make it as long as necessary but as short as possible. If you can use a smaller font or less white space and keep it to one or two pages, do so.
- In reverse chronological order, list your employers, and for each position include all the appropriate duties, responsibilities, accomplishments and technical particulars that will support your candidacy.
- Current competitive job market pressures require you to include hardware/software information, even for no more than a reasonably "scannable" resume. Try, however, to integrate the various acronyms and buzzwords into the body of each position description as well.
- If your resume will include an "Objective" or "Summary," keep it as general as possible, but as specific as necessary. You want your options kept somewhat open, but it's very important to be readily recognized by the reader as appropriate for something specific.
- Use either a paragraph or "bulleted" style, whichever suits the way you think.
- Finally, remember that a resume is only a marketing piece. It won't get you the job, but it should get you in the door and provide a starting point for interview discussions.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I was recently laid off from a job in customer service/support, in which I had over 11 years of experience with computer peripheral equipment compatible in the IBM and Unisys environments. Where would I find the best opportunities for employment with my background?

Initials and town withheld

A Try going after a programming position supporting a customer service department, perhaps in a large computer hardware vendor or service firm. It would utilize business knowledge from your prior background, enhancing your credibility with the user community and may potentially lead to an early promotion.

Bisberg is president of Two-Party Systems, Inc., an information technology recruitment firm in Livingston, N.J.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, *375 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-8931. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.*

TIP of the MONTH

Presentation skills

While most information systems professionals can speak competently about their areas of expertise, few know how to handle a situation in which their presentations draw criticism. Here are three tips on how to stay in control.

- **Anticipate.** The best defense is a good offense. By thinking through the kinds of questions and objections listeners may have, IS presenters will be able to prepare and practice responses ahead of time. For example, if you're demonstrating the benefits of videoconferencing, plan an analysis of the cost of the equipment vs. the annual travel budget. Then, go a step further. Take the opposite viewpoint and research its benefits. Then share the downside of your suggestion with the members of your audience before they can raise the issue in an adversarial manner. Balance the devil's advocate position with an abundance of evidence that supports your view.

- **Address.** If a listener fires questions or stage-whispers comments, stay calm and address the disruption immediately. Recognize the behavior as an expression of the person's fears about new technology, additional work loads or new training schedules. Turn a negative comment into an opportunity to stress a positive benefit. For example: "Thanks for bringing up last year's report that discussed glitches in the software I'm recommending. Apparently, there were problems with 3.0 and now that the company's corrected them, Version 3.1 is more powerful and versatile than anything else in its category."

- **Allow.** Realize that you may not be able to win over everyone in your audience. If one or two listeners are insistent in their criticism despite your efforts to anticipate and address their concerns, be gracious and allow them to disagree. For example, say: "John, there are two schools of thought on how to get the best use from this file server, and we're from different alma maters. Let's agree to disagree on this and get on to the next discussion point so we can keep the meeting on schedule." Your permission will take the pleasure out of their attack. More important, it will highlight your skill as a speaker and your expertise as an IS professional.

These tips are offered by Jill Vitiello, a speech writer and free-lance writer based in East Brunswick, N.J.

Systems Information Analyst

Merck Sharp & Dohme Research Laboratories offer an excellent career opportunity in its Rahway, New Jersey, Literature Resources Center. Responsibilities include the design, development, and implementation of a variety of applications using BASISPlus and other RDBMS or electronic document management tools spanning multiple concurrent projects. Design and development responsibilities include the guidance of the application development process through system development life cycle methodology via the production of specifications for requirements, users, applications, database programming, database design, documentation and validation. The position requires excellent oral and written communication skills to gather, communicate, and coordinate these requirements between users and technical staff. Knowledge of the VAX/VMS operating system, full text database technology, and library automation technologies is desirable.

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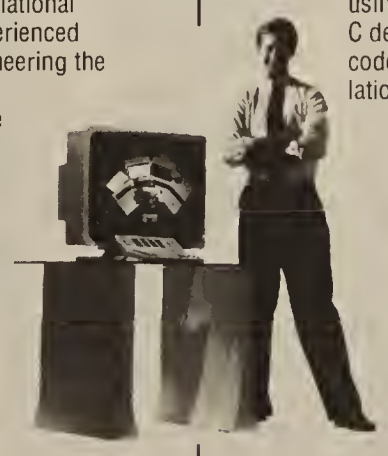

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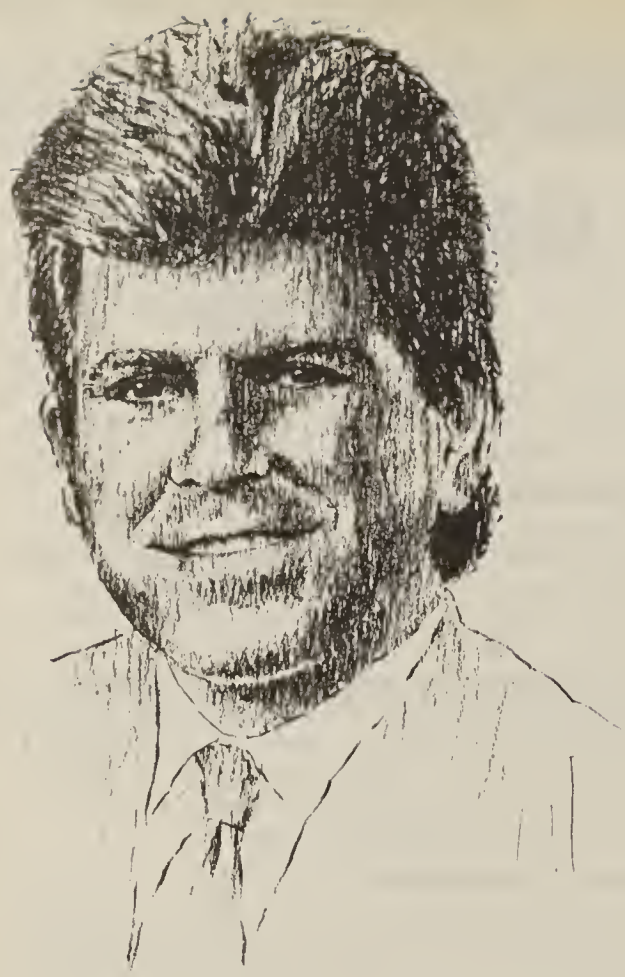

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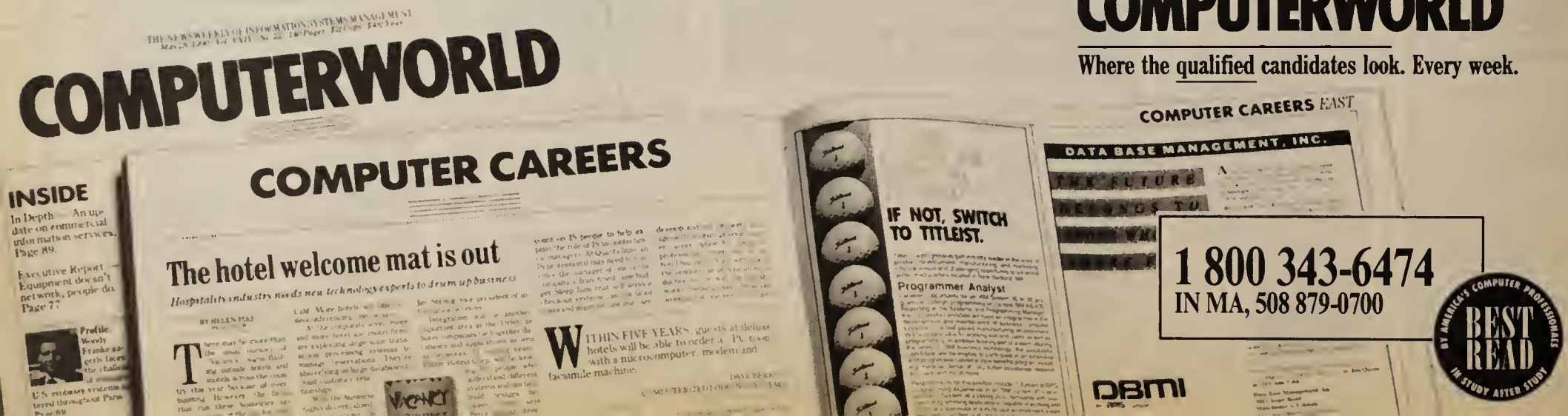

Make on-line costs toe the line

Monitoring use of database services can keep costs in line with budgets

BY EMILY LEINFUSS
SPECIAL TO CW

Easy access to on-line databases may be a boon to users, but it can create numerous headaches for information systems managers trying to monitor and reduce expenses.

Still, cost savings can be found if managers evaluate service use. The following are ways to control on-line database expenses:

- Negotiate volume discounts, flat rates for files, flat monthly fees and maintenance deals.
- Assess the need for the services' special features.
- Find the most efficient method of communications access.

The largest and most common area of price negotiation for on-line services is volume discounts, says Pat Alderson, Infonet services coordinator at Travelers Insurance Co. in Hartford, Conn. But in the past year, he says, two areas have emerged that can impact the way a company spends its money on services: flat rates for files used most heavily and a flat monthly commitment for an entire corporation.

Alderson says his company has saved an average of 10% annually by carefully tracking use and leveraging those discounts.

One way to save money using on-line databases is by limiting special features and services.

The IS department at Ingersoll-Rand Co. in Woodcliff Lake, N.J., evaluates all on-line service features, says George Tabback, director of corporate IS. "We help users to identify the segment of the various applications they are interested in and the charges, to determine whether they really need them or not."

Managers also stress that software maintenance is a major ongoing cost, although they admit there is not much that can be done about it. "These costs go up an average of 10% a year, which a lot of users don't realize," says Michael Brown, manager of computer operations and software at Liquid Air Corp. in Walnut Creek, Calif.

Tabback adds that service vendors often raise their software maintenance base prices every year. Then they offer discounts on that price to users. However, the price of software maintenance is still based on a percentage of the cost of the base price, not the discounted rate. For example, he says, a service may cost $100,000, with maintenance at 15%. If the vendor raises the base price to $150,000 and offers a 50% discount, the maintenance is still 15% of $150,000.

Connection costs

Telecommunications is another major factor. To offset dial-up telecommunications costs, Coudert Brothers in New York, an international law firm, has set up a packet-switching multiplexer network that allows users to share the same telephone line going out to Mead Data Central's legal research service, Lexis, says John Brown Jr., manager of IS.

"With multiple people using the same wire, you are able to put more people on a facility rather than having separate dial-up lines for everybody. We are putting six people on one pipe — and that may cost $50 a month — vs. six individual lines each costing $20 a month," he says.

Telecommunications is such a growing and changing area that IS professionals must closely monitor which configuration would be the most efficient. "New technologies are always coming up, and users are not aware of better and more technologically advanced methods of accessing data or of speeding up the transmission of data," says Ronald Blystone, director of IS at Harsco Corp. in Camp Hill, Pa.

Blystone says IS can also be instrumental in saving money and time by acting as a central coordinator. Service vendors usually don't identify other user departments at a particular company, so it is up to the firm to uncover that information, he says.

Leinfuss is a free-lance writer based in Sarasota, Fla.

Three steps

Pat Alderson, Infonet services coordinator at Travelers in Hartford, Conn., outlines three organizational steps that are crucial to the management of database services:

- **Find out what the user base is in a corporation.** "This is not as easy as it sounds," Alderson says, because "vendors won't always be interested in sharing what is going on throughout the company."
- **Find out the usage patterns of those users.** Vendors can provide usage reports on request, Alderson says. Then, by analyzing that use, companies can find out if users are employing the most direct route to the information they need. "Information is available from many different sources, and the most direct source is usually the least expensive way to go. For example, if you need a credit report and are accessing through a gateway service, it could be at a higher rate than if you were going through the actual provider of the information," he explains.
- **Work with the method of access to the database — the telecommunications network.** Travelers uses IBM's information network service for connection to some of its on-line database providers because IBM offers significant discounts to its large customers, and the service was already in place at Travelers.

By following these three steps, an IS professional can make the costs of on-line services much more predictable and easier to budget for, says Alderson. However, a lot of coordination has to go into the process before any results can be realized.

EMILY LEINFUSS

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Portable 386	$1,900	$2,100	$1,500
SLT 286	$1,700	$1,900	$1,550
LTE 286	$1,800	$1,900	$1,600
Deskpro 286	$800	$1,000	$700
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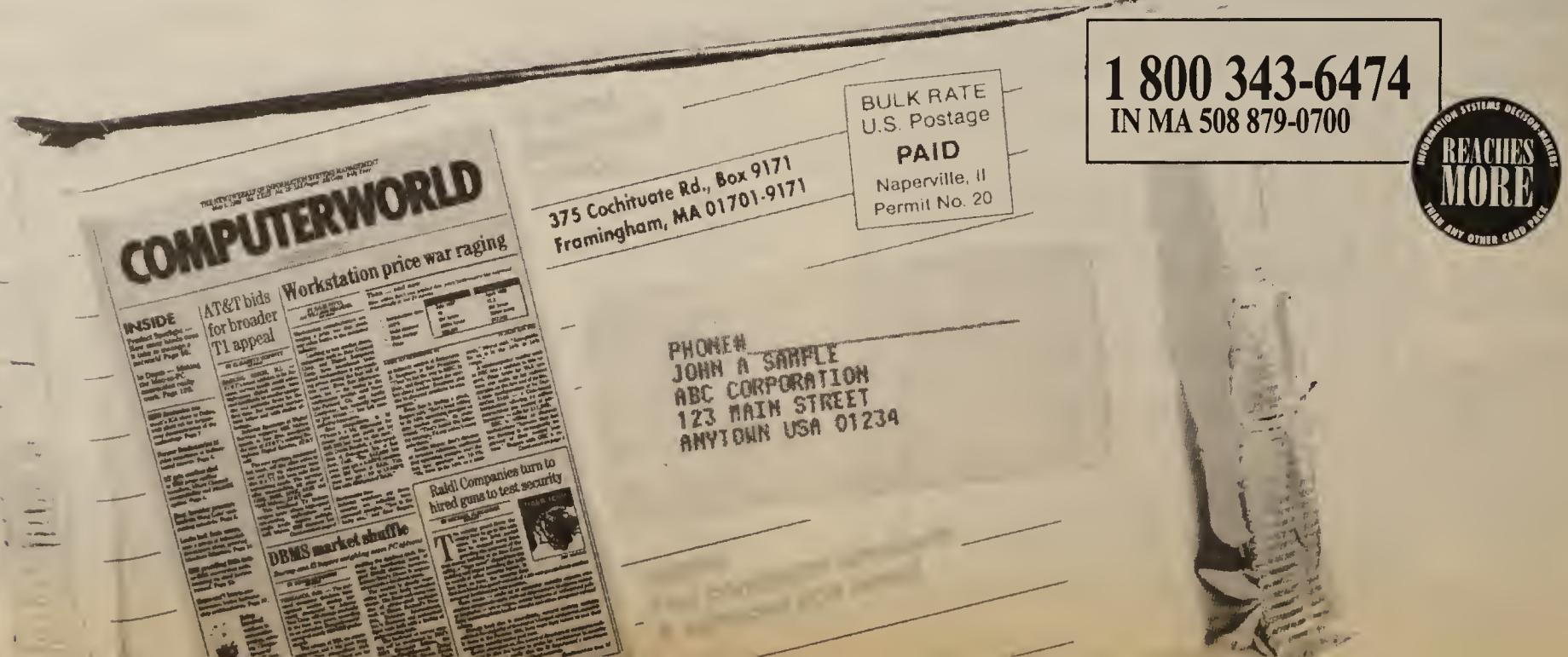

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INDUSTRY ALMANAC

VIDEOCONFERENCING: BRIGHT PICTURE

Investors seeking long-term opportunities in the technology sector might want to focus on teleconferencing companies.

U.S. businesses spent an estimated $100 million on videoconferencing equipment last year, according to John Rohal, an analyst at Alex. Brown & Sons, Inc. in Baltimore. This year, Rohal said, sales in the sector will reach $160 million — a growth spurt of 60% — with Compression Labs, Inc. and Picturetel Corp. leading the way.

Better image compression algorithms and new, more reliable video-oriented microchips will make teleconferencing gear more affordable, pushing sales upward, Rohal said.

Taking stock

Which is the better investment: San Jose, Calif.-based Compression Labs or Peabody, Mass.-based Picturetel?

"Picturetel in the short term, definitely," said Jim Kedersha, an analyst at Cowen & Co. in Boston. The company makes and sells cheaper teleconferencing equipment than does Compression Labs, he said. Further, Picturetel's most recent quarterly statements show its unit shipments growing faster than its rival's. Kedersha said to buy Picturetel right now but watch the competition.

Compression Labs, which he rated a hold, may have the edge in the long term. Although Compression Labs' equipment is currently more expensive, it is also of higher quality, according to Kedersha. "With component prices dropping all the time, people will soon be able to afford the higher quality stuff they want," he said.

Other Wall Street opinions of the two stocks vary.

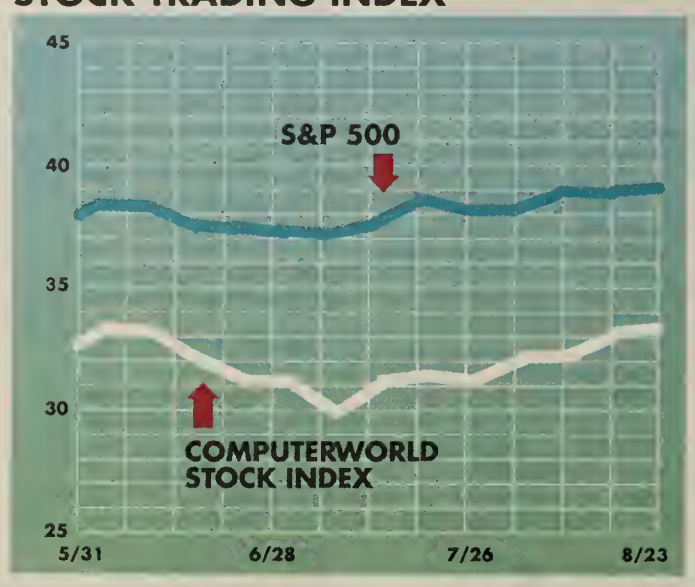
• **Paine Webber, Inc.** Compression Labs is attractive now, in part because its vision of the future is "leading edge," said Stephen Smith, an analyst at the New York brokerage firm. The company plans to leverage its core video compression technology in forays into high-definition television and desktop video. These markets have the potential to grow larger than the videoconferencing market is today, he said. They "are already beginning to turn from concepts to reality and should favorably impact Compression Labs' financial results over the next 12 months," Smith said. Picturetel is currently unrated by Paine Webber.

• **Alex. Brown & Sons.** Stock up on Picturetel shares, Rohal advised. He recently upgraded the stock from buy to strong buy, citing the company's "dramatic" revenue and earnings growth reported for its fourth quarter, ended June 30. Fiscal year 1991 sales were more than $17 million, up from $15.5 million last year. The current quarter looks bright, too. In addition to four models of the high-end System 4000 introduced in January, the company filled in its low-end line with a $19,000 black-and-white model and a $24,900 model.

• **Shearson Lehman Brothers, Inc.** This brokerage firm just initiated coverage of Compression Labs with a recommended rating. Total sales for 1990 were just shy of $52 million, up 77% from the year before. The most recent quarterlies show $16 million in sales at Compression Labs, compared with $12.8 million in the corresponding period a year ago. The current stock price on Compression Labs, near $23, does not reflect the company's strong competitive position or its potential for expansion into new markets, according to analyst Michael Pytosh.

KIM S. NASH

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

• Like other world markets, U.S. stocks plummeted early last week in response to political turmoil in the Soviet Union, then soared as the coup d'etat by Soviet hard-liners dissipated later in the week. Control Data Corp., which has a site in the USSR, lost ground by Thursday, slipping ¾ of a point to 9⅛. Borland International, Inc., which also has a Soviet office, was unchanged at 49½.

• Bellwether IBM plunged 4⅛ points to 94⅜. Digital Equipment Corp., which told *Computerworld* it will forge ahead with plans to build an office in the Soviet Union, slid ⅜ of a point to 62¼.

• Unisys Corp. advanced ⅝ of a point to 5⅛; the company said it may sell its defense electronics unit. Data General Corp. and Pyramid Technology, Inc. each lost ⅝ of a point to 17⅜ and 16, respectively.

• Dell Computer Corp. jumped 3⅝ points to 35¼ after it released news of good quarterly earnings. Likewise for AST Research, Inc., which moved up ½ a point to 29.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, AUGUST 23, 1991

TOP PERCENT GAINERS

System Software Assoc.	40.35
Platinum Technology	21.98
Apertus Technologies	19.04
Televideo Systems	16.80
Aicorp	14.29

TOP PERCENT LOSERS

Artel Communication Corp.	-25.00
Selecterm Inc.	-18.75
Maxtor Corp.	-11.12
Information Int'l	-10.00
Rexon Inc.	-6.85

TOP DOLLAR GAINERS

Novell Inc.	7.63
System Software Assoc.	5.75
Platinum Technology	5.00
Xerox Corp.	4.25
Dell Computer Corp.	3.50

TOP DOLLAR LOSERS

Autodesk Inc.	-3.25
Matsushita Electronics	-2.25
IBM	-1.63
Knowledgeware Inc.	-1.50
Digital Equipment Corp.	-1.00

Communications and Network Services — Up 1.48%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
OTC	13.00	5.38	3 COM Corp.	7.25	0.00	0.00
NYS	69.75	53.75	American Info Techs Corp.	62.50	1.75	2.88
NYS	40.38	29.00	AT&T	39.13	0.00	0.00
OTC	4.13	0.88	Artel Communication Corp.	1.50	-0.50	-25.00
NYS	56.25	40.25	Bell Atlantic Corp.	49.25	2.88	6.20
NYS	56.25	46.13	Bellsouth Corp.	48.38	1.00	2.11
NYS	52.88	14.75	Cabletron Systems	50.00	1.00	2.04
OTC	25.88	8.25	Compression Labs Inc.	22.63	-0.25	-1.09
OTC	5.13	2.44	Data Switch Corp.	2.75	0.00	0.00
NYS	21.50	8.88	Digital Comm. Assoc.	12.75	-0.38	-2.86
OTC	25.25	12.25	Dynatech Corp.	17.13	0.13	0.74
OTC	12.38	5.00	Fibronix Int'l Inc.	7.00	0.13	1.82
OTC	3.75	1.75	Gandalf Technologies Inc.	3.00	0.25	9.09
NYS	3.50	1.63	General Datacomm Inds.	2.50	0.00	0.00
NYS	33.50	24.88	GTE Corp.	29.63	0.38	1.28
NYS	63.00	40.25	ITT Corp.	60.38	1.75	2.99
OTC	34.63	17.88	MCI Commmunications Corp.	29.25	0.38	1.30
OTC	8.25	2.75	Microcom Inc.	8.00	0.50	6.67
NYS	12.38	4.00	Network Equipment Tech.	11.63	-0.13	-1.06
OTC	13.25	4.00	Network General	8.75	1.00	12.90
OTC	16.75	8.13	Network Systems Corp.	16.38	0.63	3.97
NYS	40.25	22.13	Northern Telecom Ltd.	40.25	2.13	5.57
OTC	68.50	17.25	Novell Inc.	68.50	7.63	12.53
NYS	77.50	67.00	Nynex Corp.	75.75	0.88	1.17
NYS	47.50	37.00	Pacific Telesis Group	43.13	1.13	2.68
OTC	11.63	3.63	Penril Data Comm. Ntwks.	7.50	-0.25	-3.23
OTC	33.00	8.25	PictureTel Corp.	31.00	0.25	0.81
NYS	24.50	8.88	Scientific Atlanta Inc.	14.00	0.13	0.90
NYS	57.50	47.25	Southwestern Bell Corp.	54.63	1.25	2.34
NYS	31.50	20.63	United Telecom	25.88	-0.25	-0.96
NYS	40.75	32.88	U S West Inc.	36.13	0.00	0.00

Computer Systems — Up 0.65%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
OTC	20.75	4.50	Advanced Logic Research	13.50	-0.25	-1.82
ASE	17.88	10.00	Amdahl Corp.	14.00	0.63	4.67
OTC	73.25	24.25	Apple Computer Inc.	53.00	-0.25	-0.47
OTC	9.13	3.50	Archive Corp.	4.25	0.38	9.68
OTC	32.75	7.50	AST Research Inc.	28.00	0.00	0.00
NYS	9.38	4.00	Bolt, Beranek & Newman	6.88	-0.13	-1.79
NYS	21.63	4.50	Commodore Int'l	11.00	-0.63	-5.38
NYS	74.25	29.88	Compaq Computer Corp.	35.38	0.38	1.07
OTC	2.13	0.13	Computer Automation Inc.	1.38	0.00	0.00
NYS	14.38	6.75	Control Data Corp.	9.00	-0.25	-2.70
NYS	19.75	8.38	Convex Computer	10.63	-0.38	-3.41
NYS	44.50	20.00	Cray Research Inc.	40.25	-0.75	-1.83
NYS	19.38	3.50	Data General Corp.	17.38	-0.38	-2.11
NYS	3.25	0.75	Datapoint Corp.	1.38	0.00	0.00
OTC	34.38	8.25	Dell Computer Corp.	34.38	3.50	11.34
NYS	83.00	45.50	Digital Equipment Corp.	61.50	-1.00	-1.60
NYS	28.88	13.75	Harris Corp.	24.13	0.25	1.05
NYS	56.63	24.88	Hewlett Packard Co.	53.50	2.50	4.90
NYS	139.75	92.00	IBM	95.00	-1.63	-1.68
OTC	12.00	7.75	Information Int'l	9.00	-1.00	-10.00
NYS	149.00	106.00	Matsushita Electronics	115.25	-2.25	-1.91
OTC	20.88	7.25	MIPS Computer Systems	11.50	-0.63	-5.15
NYS	109.50	44.50	NCR Corp.	108.88	0.13	0.11
OTC	29.50	10.75	Pyramid Technology	16.00	-0.25	-1.54
OTC	24.75	7.50	Sequent Computer Sys.	8.13	0.13	1.56
NYS	47.25	18.00	Silicon Graphics	40.00	1.25	3.23
NYS	40.00	14.63	Stratus Computer Inc.	40.00	2.75	7.38
OTC	38.63	15.00	Sun Microsystems Inc.	33.00	0.75	2.33
NYS	17.63	8.88	Tandem Computers Inc.	12.25	0.13	1.03
NYS	36.50	23.38	Tandy Corp.	27.88	2.50	9.85
OTC	23.00	6.75	Teradata	20.25	-0.50	-2.41
NYS	6.13	1.38	Ultimate Corp.	3.88	-0.13	-3.13
NYS	9.50	1.75	Unisys Corp.	5.13	0.50	10.81
ASE	5.75	2.00	Wang Labs Inc. (b)	2.88	0.00	0.00

Software & DP Services — Up 3.65%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
OTC	63.00	17.00	Adobe Systems Inc.	52.00	-0.50	-0.95
OTC	12.25	3.50	Aicorp	5.00	0.63	14.29
OTC	59.88	21.00	Aldus Corp.	40.00	0.13	0.31
OTC	28.50	12.00	American Mgmt. Systems	20.25	1.25	6.58
OTC	17.25	7.50	American Software Inc.	12.50	0.00	0.00
NYS	4.63	1.38	Anacomp Inc.	3.25	0.00	0.00
OTC	18.25	10.00	Analysts Int'l	14.25	0.75	5.56
OTC	16.63	4.88	Ashton Tate	16.13	0.00	0.00
OTC	10.25	4.00	ASK Computer Sys.	9.63	0.50	5.48
NYS	37.00	22.63	Auto Data Processing	33.75	2.13	6.72
OTC	62.25	32.00	Autodesk Inc.	48.00	-3.25	-6.34
OTC	35.50	18.50	BGS Systems Inc.	33.00	0.50	1.54
OTC	50.75	17.75	BMC Software Inc.	50.75	1.75	3.57
OTC	16.25	8.75	Boole & Babbage Inc.	10.00	0.00	0.00
OTC	64.25	15.13	Borland Int'l	50.00	0.75	1.52
OTC	20.88	5.13	Cognos Inc.	16.13	0.13	0.78
NYS	11.13	4.38	Computer Associates	8.50	-0.50	-5.56
OTC	17.75	9.50	Computer Horizons	11.00	-0.25	-2.22
NYS	73.25	36.75	Computer Sciences	57.25	3.25	6.02
NYS	11.25	6.63	Computer Task Group	7.63	0.00	0.00
OTC	22.75	13.00	Comshare Inc.	21.25	1.25	8.25
OTC	13.25	3.75	Corporate Software	13.25	0.75	6.00
NYS	52.25	29.50	General Motors E (EDS)	50.00	0.25	0.50
OTC	18.75	7.25	Goal Systems Int'l	14.75	1.00	7.27
OTC	7.00	1.88	Hogan Systems Inc.	5.50	-0.25	-4.35
OTC	26.00	7.75	Information Resources	24.50	0.13	0.51
OTC	7.75	2.63	Informix Corp.	5.88	0.00	0.00
OTC	4.75	1.38	Intellicorp Inc.	2.88	0.25	9.52
OTC	31.50	10.50	Intergraph	20.25	0.50	2.53
OTC	8.25	2.50	Interleaf Inc.	6.38	0.63	10.87
OTC	12.25	6.88	Intersolv	9.50	0.25	2.70
OTC	43.25	10.00	Knowledgeware Inc.	26.63	-1.50	-5.33
OTC	45.00	16.75	Legent Corp.	25.25	1.75	7.45
OTC	38.50	12.50	Lotus Development	38.50	1.25	3.36
OTC	19.00	9.00	Mentor Graphics Corp.	12.75	-0.50	-3.77
OTC	32.00	10.25	Micrografx	12.00	0.38	3.23
OTC	85.25	35.75	Microsoft Corp.	85.25	3.50	4.28
NYS	15.50	4.00	On Line Software Int'l	15.50	0.75	5.08
OTC	14.25	4.88	Oracle Systems	10.25	0.38	3.80
NYS	13.25	7.00	Pansophic Systems	10.88	1.25	12.99
OTC	10.00	1.25	Phoenix Technologies	9.25	0.25	2.78
OTC	27.75	18.00	Platinum Technology	27.75	5.00	21.98
NYS	52.00	33.38	Policy Management Sys.	50.50	2.38	4.94
NYS	22.75	11.50	Reynolds & Reynolds	22.38	2.13	10.49
NYS	11.75	6.75	Ross Systems	10.75	1.00	10.26
OTC	27.25	14.75	SEI Corp.	24.75	0.25	1.02
OTC	22.88	13.38	Shared Medical Systems	21.13	0.13	0.60
OTC	35.25	12.00	Software Publishing Corp.	17.50	-0.75	-4.11
NYS	14.63	5.50	Sterling Software	13.38	0.38	2.88
OTC	19.75	9.50	Sungard Data Sys.	15.75	-0.88	-5.26
OTC	55.88	17.75	Symantec Corp.	54.50	0.25	0.46
NYS	11.38	4.50	System Center Inc.	7.88	-0.25	-3.08
OTC	37.25	12.50	System Software Assoc.	20.00	5.75	40.35

Semiconductors — Up 4.21%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
NYS	14.25	3.63	Advanced Micro Devices	11.50	0.38	3.37
NYS	12.50	5.50	Analog Devices Inc.	7.88	0.13	1.61
OTC	13.50	5.25	Chips & Technologies	7.75	0.13	1.64
OTC	59.25	28.00	Intel Corp.	50.25	2.50	5.24
NYS	12.50	5.13	LSI Logic Corp.	7.25	0.38	5.45
NYS	19.13	6.75	Micron Technology	13.88	1.25	9.90
NYS	72.50	45.75	Motorola Inc.	68.38	1.63	2.43
NYS	8.38	3.00	National Semiconductor	5.50	0.00	0.00
NYS	47.63	22.50	Texas Instruments	31.38	0.13	0.40
OTC	12.25	3.00	VLSI Technology	7.00	0.63	9.80
OTC	16.75	4.75	Weitek	7.75	0.75	10.71
ASE	10.38	3.13	Western Digital Corp.	3.75	0.00	0.00

Peripherals & Subsystems — Up 3.51%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
OTC	2.75	0.88	Apertus Technologies	1.56	0.25	19.04
OTC	16.75	7.50	Banctec Inc.	12.75	0.25	2.00
OTC	17.50	4.25	Cambex Corp.	17.25	1.25	7.81
ASE	11.75	4.25	Cognitronics Corp.	8.00	0.38	4.92
NYS	31.25	14.63	Conner Peripherals	21.63	0.25	1.17
ASE	14.25	7.00	Dataram Corp.	14.25	1.25	9.62
NYS	13.00	4.50	EMC Corp.	7.63	0.00	0.00
NYS	47.25	33.75	Eastman Kodak Co.	44.00	1.00	2.33
OTC	11.25	4.75	Emulex Corp.	8.50	-0.38	-4.23
OTC	25.50	14.00	Evans & Sutherland	17.00	0.75	4.62
OTC	6.50	3.88	Iomega Corp.	5.13	0.25	5.13
OTC	28.25	6.75	IPL Systems Inc.	22.63	2.38	11.73
OTC	8.88	1.63	Maxtor Corp.	3.50	-0.44	-11.12
OTC	18.00	4.38	Micropolis Corp.	7.00	0.13	1.82
NYS	97.50	73.63	3M Corp	87.13	0.63	0.72
OTC	10.75	6.00	Printronix Inc.	7.13	0.38	5.56
NYS	24.75	8.50	QMS Inc.	21.63	-0.88	-3.89
OTC	18.25	8.25	Quantum Corp.	11.25	0.50	4.65
NYS	7.63	4.38	Recognition Equipment	6.63	-0.25	-3.64
OTC	11.50	4.00	Rexon Inc.	8.50	-0.63	-6.85
OTC	19.88	5.63	Seagate Technology	9.50	0.38	4.11
NYS	51.50	11.00	Storage Technology	45.88	0.88	1.94
OTC	4.75	1.25	Tandon Corp.	2.44	0.19	8.36
NYS	30.50	12.00	Tektronix Inc.	29.38	0.25	0.86
OTC	0.53	0.16	Televideo Systems	0.44	0.06	16.80
NYS	60.13	29.00	Xerox Corp.	59.25	4.25	7.73

Leasing Companies — Off 4.69%

Exch	52-Week	Range		Aug. 23 Close	Wk Net Change	Wk Pct Change
OTC	16.25	7.00	Amplicon Inc.	14.75	0.00	0.00
NYS	28.38	14.63	Comdisco Inc.	20.63	0.00	0.00
OTC	14.63	8.88	LDI Corporation	12.75	0.00	0.00
OTC	4.50	2.25	Selecterm Inc.	3.25	-0.75	-18.75

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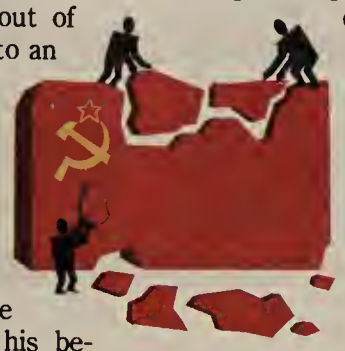
Soviets kept lines open during crisis

BY CHRISTOPHER LINDQUIST and ELISABETH HORWITT
CW STAFF

With fear in the air and telephone circuits jammed, people in the U.S. and the Soviet Union turned to innovation to communicate with each other.

Firms with dedicated lines and packet-switched networks experienced little trouble getting through. Those with cellular phones could dial out of the country and onto an international satellite network.



Indeed, one published report said Russian Federation President Boris Yeltsin contacted the outside world from inside his besieged parliament building over a cellular phone borrowed from a visiting American executive. The executive, Paul Tatum, represented Americom International Corp. and was in Moscow discussing financing for a new hotel in Moscow that Americom developed jointly with Radisson Hotels International, Inc.

A Borland International, Inc. employee in Moscow sent the message, "I'm safe and sound. My family also. Despite the state of emergency, Borland's products sell as usual."

Telephone circuits and other regular connections between the Soviet Union and the U.S. overflowed last week, causing a secondary flood of electronic mail.

E-mail traffic in the talk.politics.soviet news group on Usenet, an international Unix users network, increased dramatically. Several hundred messages appeared daily as people requested and reported information on the situation.

Users inside the Soviet Union posted firsthand accounts of the coup and reports from Soviet radio and television. Messages were sent to friends outside the country and reposted with names and network addresses removed in fear of senders being persecuted if the coup succeeded.

However, users inside the troubled state begged for restraint as limited communications lines were strained by the barrage of messages. "Please stop flooding the only narrow channel with bogus messages, with silly questions," one user in Moscow requested. "We need the bandwidth to help to organize the resistance. Please, do not (even unintentionally) help these fascists!"

While it was difficult to contact Soviet bulletin boards from outside the USSR, commercial E-mail services ran continuously, vendors said.

USSR

FROM PAGE 1

Radisson's Moscow site has no computers, and direct data lines are all but impossible to acquire in the Soviet Union, Mattes said. The reservation center has notified the Soviet property of new bookings via fax, which can take 12 to 24 hours to deliver during ordinary times, Mattes said. Last week, "we couldn't get through at all."

Both DHL Worldwide Express and United Parcel Service, Inc. use dedicated lines or packet-switched networks that do not rely on regular telephone circuits, so neither had trouble communicating with its Soviet sites. Both reported that airport congestion interrupted package delivery to and from the USSR for a day or more.

In the vanguard of companies rushing to take advantage of glasnost during the past year or two have been computer and network companies. The number of computer and business automation systems shipped to the Soviet Union in the past year has grown phenomenally, according to a study by the Washington, D.C.-based Computer and Business Equipment Manufacturing Association (CBEMA).

By the end of 1989, the Soviets had purchased $17.33 million worth of equipment, an increase over the $1.92 million they bought in 1987. But this figure jumped dramatically last year, rising to $92.37 million by the end of 1990, according to CBEMA figures.

Control Data, which has been selling computers in the Soviet Union for 20 years and now holds a $30 million contract to provide powerful computers for the USSR's nuclear power facilities, said it is optimistic about its prospects for the future.

However, several computer firms contacted at the height of last week's crisis said they were putting their ventures on hold until they could evaluate the coup's implications for the business climate there.

Digital Equipment Corp. spokesman Mark Frederickson said DEC was going ahead with efforts to establish a formal office in the Soviet Union, but it was too early to determine how the coup would affect the company's short- and long-term business plans there.

This sentiment was echoed by a spokesman for Apple Computer, Inc., which plans to begin selling the Macintosh in the Soviet Union in October.

> THE NUMBER OF computer automation systems shipped to the USSR in the past year has grown phenomenally.

A number of companies recalled non-Soviet employees during the crisis. DEC evacuated the temporary office it had set up in Moscow last January; the office is staffed not by Soviets but by people from European headquarters in Geneva. Radisson also called home its American personnel from the Moscow property, leaving their "Soviet counterparts" to keep the hotel running, Mattes said.

"I think the environment will be more stable since most significant political rivals to Gorbachev and Yeltsin are gone," UPS Telecommunications Manager Douglas Fields said. "We see the USSR as a very attractive market and plan to expand there."

The stock market reflects these sentiments: Tokyo's Nikkei index of 225 stocks was the first to feel the punch, losing 1,357.61 points last Monday — nearly 6% — to close at 21,456.76. When markets in the U.S. opened, some of the initial panic had subsided. The Dow Jones Industrial Average dropped 69.99 points for the day, or 2%, to 2898.03 — after initially plunging more than 100 points at the starting bell on Monday morning.

On Wednesday, when the coup was clearly on its way out, the Dow closed up 88 points.

Senior Correspondent Ellis Booker and Staff Writer Kim Nash contributed to this report.

No export relaxation delay

Relaxation of U.S. technology export controls to the Soviet Union, scheduled to go into effect Sept. 1, remains on track, a Bush administration official said last week.

Those rules, adopted in draft form last month, make it far easier for the Soviet Union to buy computer and other high-technology goods from U.S. vendors.

"I haven't detected a change one way or the other in the policy," said Cesare F. Rosati, a technical adviser on international trade at the U.S. Department of State.

On word of the Soviet coup last Monday, many observers speculated that implementation of the new rules, established by the Coordinating Committee on Multilateral Export Controls (Cocom), would be delayed or even terminated. But Rosati said he was unaware of any schedule changes being contemplated.

In general, the new Cocom rules do away with the special export licenses that have been required for systems more powerful than an Intel Corp. 80386-class personal computer.

While hardware vendors have permission to sell into the Soviet marketplace, they are still hampered by the country's lack of convertible currency, an IBM spokeswoman noted.

"The USSR has no hard currency, and the ruble is useless outside, so they have to get a loan from some source to provide currency to pay us," the spokeswoman said.

ELLIS BOOKER

Bob: Nothing but a break in stride

BY JOANIE M. WEXLER
CW STAFF

Hurricane Bob's winds and rains tested many East Coast companies' disaster planning last week, but disruptions appeared to be minimized by tight emergency procedures.

When the storm hit Lifeline Systems, Inc. in Watertown, Mass., at 3 p.m. on Monday and the main power fizzled, the computer system rolled into emergency backup mode. The firm makes systems that allow 23,000 elderly and medically at-risk clients to communicate via radio signal with hospitals and other emergency services. The power outage caused Lifeline's main processor, a Digital Equipment Corp. VAX 6000 Model 310, to shift to two Microvax 3100s.

Dave Silverman/Picture Group

Hurricane Bob *unleashed chaos, but emergency plans helped businesses weather the storm*

However, "since the Microvax is only big enough to operate our telecommunications switch, we had to go into manual mode during our peak call traffic," said Chuck Abbott, manager of Lifeline Central, where incoming calls are monitored.

Although hospitals in New Bedford, Mass., are priority customers of the electric utility, St. Luke's Hospital was without power for about eight hours — the longest outage in recent history, said Richard Macomber, director of MIS.

John Collins, executive vice president of operations and automation at European-American Bank in Hempstead, N.Y., ordered his data center to switch to generator power "before the full fury of the storm."

Communications proved to be the most vulnerable function at defense contractor Aquidneck Data Corp. in Newport, R.I. Director of computer services Kathleen Clair explained that because the firm is located on an island, the reliability of its terrestrial lines is sporadic.

She explained that the firm would "have had to resort to paper and pencil" if the outage had lasted much beyond the 2½ days the company lacked power.

Software 2000, Inc. in Hyannis, Mass., suffered only a short-term power outage. Howard Whelden, vice president of corporate services, said the firm monitored the weather as Hurricane Bob approached and took precautionary measures such as rerouting calls to regional offices and powering down IBM Application System/400s and System/38s.

Senior Editor Maryfran Johnson and Staff Writer Christopher Lindquist contributed to this report.

NEWS SHORTS

Industry loses 100,000 jobs

The U.S. electronics industry lost 100,000 jobs in the year ended June 1991, the American Electronics Association (AEA) reported last week. The number of workers in the technology sector who have lost their jobs is accelerating, according to the AEA. Since November 1989, U.S. electronics employment has decreased by 150,000 jobs. The "hemorrhage" of jobs can be attributed in a large part to U.S. electronics companies being shut out of technology markets overseas, according to J. Richard Iverson, president of the AEA.

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University pays piracy fine

The University of Oregon Continuation Center settled a copyright lawsuit with the Software Publishers Association (SPA), agreeing to pay $130,000 as well as organize and host a national conference on copyright law and software use. This was the first software copyright suit brought against a higher education institution. The federal suit was filed against the school in February 1990 on behalf of several software vendors, including Lotus Development Corp., Microsoft Corp. and Wordperfect Corp. The suit alleged that the center employees made unauthorized copies of the software companies' program and training manuals.

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Hayes, Everex settle patent suit

Modem pioneer Hayes Microcomputer Products, Inc. and microcomputer and peripherals maker Everex Systems, Inc. said last week that they have settled patent litigation between them. Everex and co-defendants Omnitel, Inc. and Ven-Tel, Inc. were found by a San Francisco jury in January to have willfully infringed on Hayes' patent for an escape mechanism designed into its modems. The settlement reportedly requires Everex to drop an appeal that it and its co-defendants filed in April. In addition, Everex will pay Hayes $2.5 million for past infringement as well as royalties on Hayes' modem products sold with the mechanism. The settlement does not involve Omnitel and Ven-Tel.

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Chrysler picks Motorola Unix box

Chrysler Corp. will buy Motorola, Inc.'s Unix-based midrange systems for its shop floor in what the companies characterized as a multimillion-dollar deal. About 20 Delta series systems, 900 terminals, 300 printers and support are included at 19 sites, according to a Motorola spokeswoman. Chrysler refused to comment on its choice of Motorola, which has been a dark horse in the reduced instruction set computing marketplace.

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Prime found in contempt of court

Judge Horace W. Gilmore of the U.S. District Court for the Eastern District of Michigan found Prime Computer, Inc. in contempt of court last week for failing to comply with a federal injunction entered last November. The injunction was entered as part of a $25 million judgment in an antitrust suit brought by Virtual Maintenance, Inc. in which Prime was found guilty of tying software revision to maintenance services. To rectify the contempt, Gilmore ordered Prime to send letters to 350 Prime 50 series customers of Product Design Graphics Systems software explaining that the users may elect to use a non-Prime hardware service. To date, Prime is reported to have notified 14 users. Prime said it plans an appeal.

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System One head leaves

R. Lamar Durrett, president and chief executive officer of System One Corp., the computer reservation and information systems subsidiary of Continental Airlines Holdings, Inc., left the firm last week as part of a reorganization of Continental's top management. Durrett left at the same time as Continental Airlines CEO Hollis L. Harris, at the request of the board of directors. Durrett had previously been vice president of information services and communications at Delta. He was named president of System One in December 1990, three months after he joined Continental Airlines as an executive vice president of administration and personnel.

EDS to boost CAD/CAM market share with buy

BY NELL MARGOLIS
CW STAFF

Rumor turned into reality last week as Electronic Data Systems Corp. signed a letter of intent to buy longtime partner McDonnell Douglas Systems Integration Co. (MDSI).

The deal moves MDSI parent McDonnell Douglas Corp. out of the U.S.-based computer industry and gives EDS an additional 4.3% of the strategic computer-aided design and manufacturing (CAD/CAM) market, according to Cambridge, Mass.-based market research firm Daratech, Inc.

However, as the acquisition winds toward an anticipated November close, analysts warn that it is likely to be months before the deal's impact can be gauged.

"No one in the CAD market will lose any sleep over this, but everyone will be looking over their shoulders," Daratech analyst Charles Foundyller said.

"Everyone," he said, includes IBM, which commands some 30% of the market — almost twice the share of second-place contender Intergraph Corp. — but relies on several giant customers to keep it there.

Little about the transaction, still in development, was revealed last week.

The prize eyed by EDS, several analysts said, is MDSI's Unigraphics CAD/CAM software line; its users could find themselves benefiting after the deal goes through.

"EDS has a lot of reasons to want to keep Unigraphics strong and healthy," said Eric Keller, an analyst at Gartner Group, Inc. in Stamford, Conn. The product line contributed some 50% of MDSI's 1990 bottom line.

In addition, Keller said, Unigraphics is the cornerstone of a major automotive engineering project currently afoot at General Motors Corp. and is a key catch for EDS, which has made no secret of its aim to offer one-stop shopping on the manufacturing floor.

The MDSI buy also nets EDS graphics and mapping packages, software engineering offerings and an outsourcing capability.

One question on the minds of industry observers is whether EDS has its sights set on an outsourcing deal with McDonnell Douglas. Historical precedent exists: Shortly after consummating a manufacturing software-related deal with Ask Computer Systems, Inc. last year, several analysts recalled, EDS and Ask announced a major outsourcing contract.

Meanwhile, EDS scored a strategic coup across the Atlantic. UK-based software developer SD-Scicon, which has spent the summer resisting EDS' advances, agreed to be acquired. The Scicon purchase, said Kidder, Peabody & Co. analyst Terence Quinn, gives EDS a "toehold in a variety of installations that could eventually result in significant outsourcing business" in Europe.

Extended reach

The proposed acquisition of McDonnell Douglas' systems group would move EDS 4.4% further into the $7 billion CAD/CAM/CAE market

	McDonnell Douglas Systems Integration Co.	Electronic Data Systems Corp.
Employees	Approximately 2,000	64,000 worldwide
1990 annual revenue	$398 million worldwide (approximately 50% contributed by Unigraphics' CAD/CAM line)	$6.1 billion
Corporate status	Wholly owned subsidiary of McDonnell Douglas Corp.	Division of General Motors Corp.

CW Chart: Michael Siggins

Vendor suits

FROM PAGE 1

firm Unicorn Systems Co. The vendors' flagship products — VI Systems' VIS/TP and Unicorn's Unikix — let users run IBM mainframe-based CICS applications on Unix platforms. Last February, VI Systems filed suit against Unicorn, alleging that Unikix is built on the patented VIS/TP technology — a charge Unicorn denies.

Over the past several weeks, VI Systems has fired off suits against three additional defendants: one Unicorn joint marketing ally, one Unicorn distributor and Burlington, N.J.-based Burlington Coat Factory — a firm whose only offense, according to the complaint, is its purchase and use of the allegedly infringing software package.

No comment

Will the suits stop at one user? "That remains to be seen," said VI Systems Chief Executive Officer Elhamy M. Kamel. The original Unicorn suit is currently in the discovery period, he noted, "and we expect to find many more of Unicorn's customers." If it turns out that such customers "knew about our lawsuit and went ahead with Unicorn despite it," he said, more users could find themselves defending a VI Systems suit.

"Suing users is ugly business and makes no sense," said Stephen Shaiman, a partner at the Bala Cynwyd, Pa.-based computer law firm of Shaiman and Bosch. "If you lose, you've spent a fortune and spread ill will. If you win, you've spent a fortune, spread ill will and poisoned your relations with your new user base."

But, he added, "I wouldn't be at all surprised if in this nasty, brutish climate that has developed, where some [firms] seem to see lawsuits as an alternative way of generating profits, we started seeing suits against users."

"The only reason a firm will sue users is to put pressure on [the allegedly offending] vendor," said Alan Borlack, a partner at the Chicago-based law firm Gordon & Glickson, P. C.

That could be reason enough. "We don't want to put anyone out of business," Kamel insisted last week, "but we do not want potential infringers to have any illusions about our seriousness and our willingness and our ability to protect our intellectual property."

The smart software user, both Shaiman and Borlack said, will enter into a software license only if it includes an indemnity clause, or so-called "hold harmless" provision. Such a provision essentially states that the vendor will reimburse any expenses the user incurs as a result of legal actions stemming from challenges to the vendor's rights in the software.

At Owings Mills, Md.-based Joseph A. Bank Clothiers, Inc., IS Vice President Frank Black has already seen the wisdom of the advice. "Software contracts should automatically include indemnity clauses," he said.

The user in search of the best hedged bet, Shaiman said, might even indulge in a little research. "Find out whether your vendor owns the software," he said. "Ask, 'How are they protecting it?' Then ask, 'How are they protecting you?' " Users who demur, he said, risk more than embarrassment.

"We're talking $10,000 just to start defending one of these suits in federal court," he warned. "There's a reason for the old saw: Patent infringement is the sport of kings."

Flexibility key for 1-2-3 for Windows

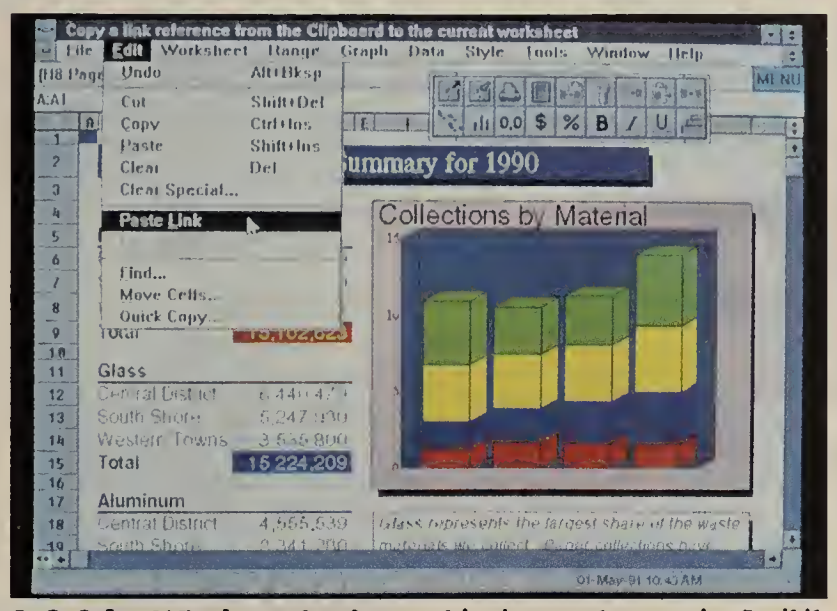
BY CHRISTOPHER LINDQUIST
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp.'s 1-2-3 for Windows is shipping and should be on your dealer's shelves by Sept. 3, according to the company. Beta-test users of the product said they believe it will give Microsoft Corp.'s entrenched Excel a run for its money with an assortment of enhancements and features.

According to users, two of the most important features of the product are its flexibility and its compatibility.

Flexibility comes through the use of "Smarticons," buttons to which users can attach macros and menu commands. Dozens of Smarticons are included, and users can modify them or create new ones. Users can then position the Smarticons on a screen to automate complex or repetitive procedures and customize their work environment.

"If you want a sum key, it's there; if you don't want it there, it's gone," said David Beckman, a partner at Beckman and Hirsch, a law firm in Burlington, Iowa. He added that users could create Smarticons dedicated to specific professions such as banking or real estate, further customizing the spreadsheet.



1-2-3 for Windows *has begun shipping, and users cite flexibility and compatibility as its most important features*

The package is also fully compatible with previous 1-2-3 file formats, macros and keystrokes through use of the "1-2-3 Classic" menu, which appears whenever users press the "/" key.

Ben Goldfarb, manager of information technology at Starkist Seafood Co. in Long Beach, Calif., was impressed by this feature because it allowed him to "eliminate the learning curve" and conserve his training investment.

Other 1-2-3 for Windows features include a full what-you-see-is-what-you-get environment, the inclusion of Adobe Systems, Inc.'s Type Manager font display and printing utility, solver and backsolver functions and integrated graphics abilities.

Datalens drivers for Ashton-Tate Corp.'s Dbase III and IV, Borland International, Inc.'s Paradox and Microsoft and Sybase, Inc.'s SQL Server are also included, allowing users to modify and use data stored in external databases as if it were part of the spreadsheet.

Pushing sales

"I think the arrival of 1-2-3 for Windows will probably drive a spirit of buying for spreadsheets on Windows," said Bill Higgs, director of software research at Computer Intelligence/Infocorp. He added, however, that it may actually fuel Excel purchases, too, as users begin comparing and buying. Despite user kudos and a huge installed base of previous versions of 1-2-3, the release of 1-2-3 for Windows does not complete the Windows spreadsheet picture, and some people may wait a little longer before buying.

"The third piece of the puzzle is Borland's Quattro for Windows," Higgs said.

1-2-3 for Windows for standalone personal computers has a retail price of $595. Server and node versions are slated to be available sometime in October.

Portable computer makers respond to antidumping rule

BY GARY H. ANTHES
CW STAFF

U.S. makers of portable computers have begun to make good on their threat to move production offshore in the wake of a ruling two weeks ago by the U.S. International Trade Commission (ITC). The ruling imposed antidumping penalties of 63% on imports of Japanese flat-panel displays [CW, Aug. 19].

Dolch Computer Systems in Milpitas, Calif., announced it will begin to produce its color portables in Germany next month. A spokesman for Dolch said the $20 million company will not lay off people as a result of the move but will scale back hiring. Dolch buys its color active-matrix LCD displays from Sharp Corp.

That has been the contention of U.S. computer manufacturers that argued before the ITC that no injury from dumping could have occurred because a domestic industry effectively does not exist.

However, Troy, Mich.-based Optical Imaging Systems, Inc. (OIS) and others that petitioned the U.S. Department of Commerce for antidumping relief said the news of its nonexistence is greatly exaggerated. OIS said it was visited by the major U.S. producers of portable computers several years ago but was rejected because of its lack of large-scale production capabilities.

A spokesman for OIS said last week that OIS is "still small" but added that OIS is a "potential alternative" to Japanese suppliers. As evidence, he said OIS just received an order from the U.S. Air Force for 150 active-matrix displays for use in aircraft.

The state of the U.S. industry could become the focus of appeals to the ITC's ruling before the U.S. Court of International Trade. Spokesmen for IBM and Apple Computer, Inc., both adversely affected by the ITC ruling, said the companies had not yet decided whether to appeal. IBM and Apple have threatened to move domestic assembly operations out of the U.S.

Chip choices

FROM PAGE 1

Intel that it will temporarily stop shipping the 50-MHz version of the I486 because of test problems. Vendors, analysts and Intel itself expressed little worry. The chip was announced June 21, and Dell Computer Corp. started shipping boxes the next day. None of its users have had problems, the company said.

Neither Dell nor IBM, which were the only companies shipping 50-MHz products, will recall their products. Each company has a contingency plan in case users call it with a problem.

Workgroup Technologies, Inc., a market research firm in Hampton, N.H., predicted the 486 chip will become the standard for new information systems purchasing — but not until the fourth quarter of 1992.

John Dunkle, Workgroup Technologies' vice president, said the 486's three-year acceptance cycle was similar to that of the 286 and 386 before it, and while Intel is outrunning the market, users will catch up.

Sources said Intel, in the meantime, is briefing hardware and software vendors on several new 486s, including its P24 chips, dual-speed processors expected out later this year, with full production scheduled to start in the first quarter of 1992. Intel is also talking about a 25-MHz version of its I486SX and a 66-MHz version of the I486DX.

Dunkle and other analysts said a new round of I486 chips may confuse users and perhaps vendors as well. But vendors said they expect users to welcome the choices.

"I think it's very, very beneficial for our customers because they can tailor machines to meet their specific needs," said Pete Riley, director of Personal Systems' U.S. marketing at IBM.

However, at least one user expressed concern.

"We are very apprehensive right now about 486 technology because of promise of the 586 on the horizon," said Mike Ball, data processing coordinator at the Federal Reserve Bank in Baltimore. "I think there's some overkill occurring in that line."

Other users said they see opportunities in variety.

Looking at Intel's product line, Raj Gupta, director of information management at Leo Burnett Co., a Chicago advertising agency, said, "It's not really confusing if your strategic direction is well set."

"The broader the choices, the better it is for us," said James A. Richardson, senior operations analyst at the Georgia Department of Natural Resources in Brunswick, Ga.

Still, the number of choices may be slowing a move away from current platforms.

"Users are not confused; it just takes them more time to wade through" the choices, said Julian Horwich, executive director of the Corporate Association of Microcomputer Professionals in Northbrook, Ill.

The other spector that users fear is a price increase.

Steve Anderson, IS architect for the Washington Department of Social and Health Services in Olympia, Wash., said he wonders whether multiplied manufacturing and marketing costs will end up on each chip regardless of Intel's "a-price-and-performance-for-each-need" motto.

Up in the air

Vendors who have announced 50-MHz I486 machines had doubt cast on their plans last week

	Announcement date	Shipping status
IBM PS/2 486/50 upgrade option	June 24, 1991	Was shipping; now on hold
NCR Corp. System 3450, 3550, 3600 and 3700	Sept. 18, 1990	Due late September
Advanced Logic Research, Inc. VEISA Array 486/50 Powerpro Array/SMP 486/50	June 25, 1991 Aug. 19, 1991	Due fourth quarter
Compaq Computer Corp. Deskpro 486/50L	June 24, 1991	Due third quarter
Dell Computer Corp. Powerline 450 DE Powerline 450 SE	June 24, 1991	Was shipping; now on hold

CW Chart: Michael Siggins

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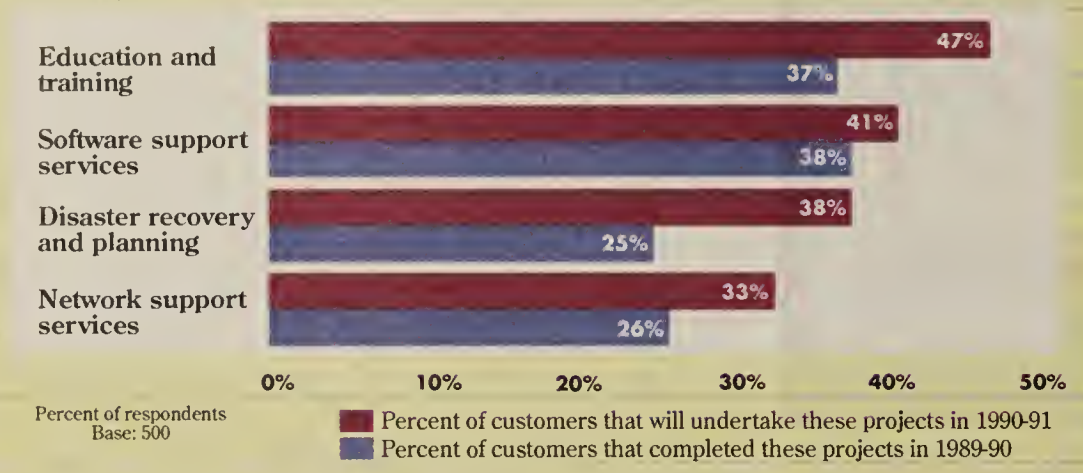
TRENDS

Education and Training

Traditionally, companies have used in-house resources to meet education and training needs; now, many are turning to outside vendors

User interest levels

Within the last year, education and training has become an increasingly pertinent issue for end users



Willingness to outsource

Education and training are more willingly outsourced than any other function performed by internal staff

	Currently use outside providers
Education and training	38%
Applications development support	24%
Disaster recovery planning services	20%
Cabling	20%
System tuning	17%

Percent of respondents, base: 500 (multiple responses allowed)

Key market trends

- Education growing as a revenue opportunity.
- Technology-delivered instruction vs. instructor-led.
- Vendor as the facilitator of education and training.
- Embedded or just-in-time training.
- Multimedia training.
- Customized training solutions.
- On-site delivery.

Product-related education/training market size (in millions)

Although significantly smaller, non-U.S. education and training markets are growing at a faster rate than the U.S. market

	1990	1995	CAGR
U.S.	$912	$1,909	15.9%
Europe	$169	$343	15.2%
Japan	$85	$273	26.3%
Other	$125	$296	18.9%

Source: Ledgeway/Dataquest, Framingham, Mass.

CW Chart: Janell Genovese

INSIDE LINES

It speaks our language, too

▶ IBM's notebook, a 5½-pounder already released in Japan and Europe, is headed for the New World, probably before Comdex/Fall '91. The box, to be called the 55SL, will be a 5½-pound, Intel 80386SX-based box (using the 20-MHz version of the chip, unlike the 12-MHz version released in Japan). It will be priced under $4,000 with a 40M-byte hard drive and around $4,200 with a 60M-byte drive. Sources said the box has a supertwisted, backlit IBM Video Graphics Array screen that is better than the one on IBM's L40SX laptop, will be upgradable to the 386SL chip and BIOS in 1992, is modular and may come without a standard floppy drive. IBM is mum about the machine for now.

Never mind

▶ Tektronix and Hewlett-Packard won't be slugging it out in court over the former's choice of names for the phase change ink-jet printer it rolled out in June. HP thought that Tektronix's Phaserjet PXI sounded just a little too similar to its Laserjet printer line. Legal storm clouds were beginning to form over HP when Tektronix decided that it really liked Phaser III PXI a whole lot better as the moniker for its new printer.

Another day, another $95 million

▶ The Microsoft boys were $95 million richer as of the end of last month. Reports filed with the U.S. Securities and Exchange Commission said Bill Gates recently sold just 1% of his personal stock holding in the firm, garnering the tidy sum of $52.5 million for the 750,000 shares. Paul Allen, co-founder of the company, sold off 500,000 shares, or a scant 2% chunk of his stake, for about $36 million. Microsoft President Jon Shirley joined the crowd and slimmed his portfolio by 9%, earning $7.3 million from the sale of 100,000 shares. Not a bad day's work.

Old bosses, new bosses

▶ Unisys is slated to pass papers on the sale of its networking subsidiary, Timeplex, Inc., on or shortly after Aug. 31. An interesting twist to the sale has been the involvement of former Timeplex executives Ed Botwinick and Vicki Brown in advising the new South African 49% owner, Mercedes Information Technologies Ltd., during purchase negotiations. An analyst who asked not to be identified speculated that if the Botwinick/Brown consulting relationship continues after closing, the two former executives would be "back controlling their little empire," since Mercedes delegates to the Timeplex board outweigh Timeplex President Dewaine Osman's board seat 3 to 1. However, it has reportedly not been decided if Botwinick and Brown will be retained after the sale. Botwinick and Osman both assert that the consulting team has had no influence on product strategy or development.

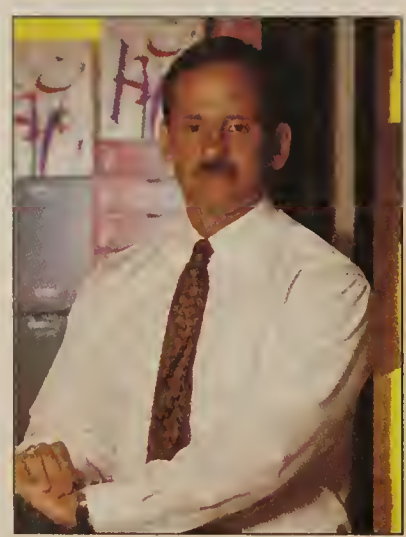
Going downtown

▶ Arco, the $18 billion oil giant, is regrouping its IS resources — and is concentrating them in a new "technology company" located in downtown Los Angeles, according to sources within Arco's IS group. It seems that the information resources of Arco were not distributed evenly, sources in several Arco units said. But it appears they will now be shared by three Arco companies. At the same time, an August Arco layoff of 1,500 has reduced the overall IS staff by an unknown amount — so the number of employees in the new IS unit has not been announced. Still, sources said they believe that the president and top managers for the company, which may be dubbed the Arco Exploration & Production Technology Co., may be announced by Sept. 1.

During the Soviet Union crisis, one of the crucial messages that got through to Moscow on the academic network Usenet was this: "Q: How many software engineers does it take to screw in a light bulb? A: It can't be done, it's a hardware problem." Do you have a news tip or a message for Computerworld*? If so, call Executive Editor Paul Gillin at (800) 343-6474, or reach us by fax at (508) 875-8931 or Compuserve at 76537,2413.*

NEXT WEEK

When **Jeffrey Papows** took over as president of Cognos, Inc. two years ago, the Ottawa-based firm was awash in red ink and dependent on a single solid product — the Powerhouse 4GL. Today, earnings are doubling each quarter, stock is up 300%, and new products are pouring out the door. Who done it and how? See Computer Industry.



Seth Resnick

Print reducers, graphics options, backward-solvers — choosing among spreadsheet features could drive even the most decisive purchaser crazy. Now, with database connections and application links — not to mention Windows compatibility — the ante has been upped. For help in working your way through the options, read next week's Product Spotlight.

A few months ago, some guys came by and stuck this on our windows.

And they weren't just any guys, either.

They were a group of editors from *PC Magazine*, and in their February 26th, 1991 issue, they had some awfully nice things to say about IRMA™ WorkStation for Windows.

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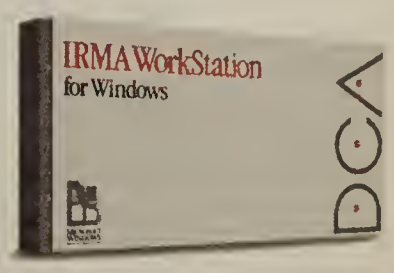

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